November, 1930

Vol. XLIII, No. 5
50 Cents, $4 a Year

The American City

To Recapture Prosperity

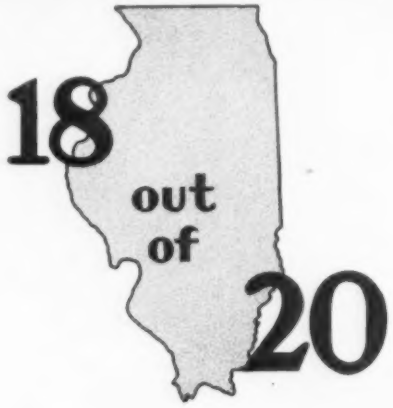
WITH this page wholly covered by these little figures, each stands for at least 10,000 persons now out of work in the United States. The October estimate of the Federal Government puts the total at 3,500,000; while the Standard Statistics Company computes the number now unemployed, exclusive of agriculture, at 4,500,000. The same authority estimates the loss in wages of this group during 1930, plus the reduced income resulting from wage cuts and part-time unemployment of other workers, at the stupendous total of $8,853,000,000. And this takes no account of the vanished profits of many thousands of merchants and others.

The problem obviously cannot be solved by governmental action alone. It would have been more acute but for what public bodies have already done; but most governmental units have nevertheless fallen far short of their possibilities in the use of public works as an aid to recapturing prosperity.

In states and cities where bond issues for public improvements will be voted this month, much can be accomplished by the speedy letting of contracts. In many municipalities and counties budgets for 1931 are now under consideration. Where administrations are far-sighted, expanded programs of needed public works—with a higher tax rate, if necessary—will be accepted as better statesmanship than charity doles and public soup-kitchens.

The winter is upon us. Every consideration of sound economics, good government and the public interest urges prompt and courageous action by public authorities. If every governmental unit will do its share, the results will be jobs for many thousands of men, business for merchants, orders for factories—and permanent improvements which might not otherwise be built.

Will our public officials—Federal, state, county and municipal—rise to the great emergency?



Popping a Paving Question in the State of Illinois

The question is: "Do you know how many of your *foremost* cities have TEXACO Asphalt paving?"

It is a question put in previous advertisements to important states of the East, South and West, and now we present it to Illinois.

Illinois musters twenty cities whose population has grown past the 25,000 mark, led by the great metropolis of the middle-west, Chicago. Isn't it significant that 18 of these outstanding 20 Illinois cities, including Chicago, today are partly served by streets paved with TEXACO Asphalt?

Two out of three U. S. cities with more than 25,000 population have TEXACO-paved streets. So have 1,200 of the country's smaller municipalities.

TEXACO Asphalt Macadam on Sheridan Road, Chicago, Ill., built by the Rock Road Construction Company.

West William Street, Decatur, Ill., showing TEXACO Sheet Asphalt Pavement Over Worn Brick Base.

TEXACO ASPHALT

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Richmond
Boston
Jacksonville

The Texas Company
ASPHALT SALES DEPT.
135 East 42nd St., New York City

Chicago
Cleveland
Kansas City
Houston
Dallas
Buffalo

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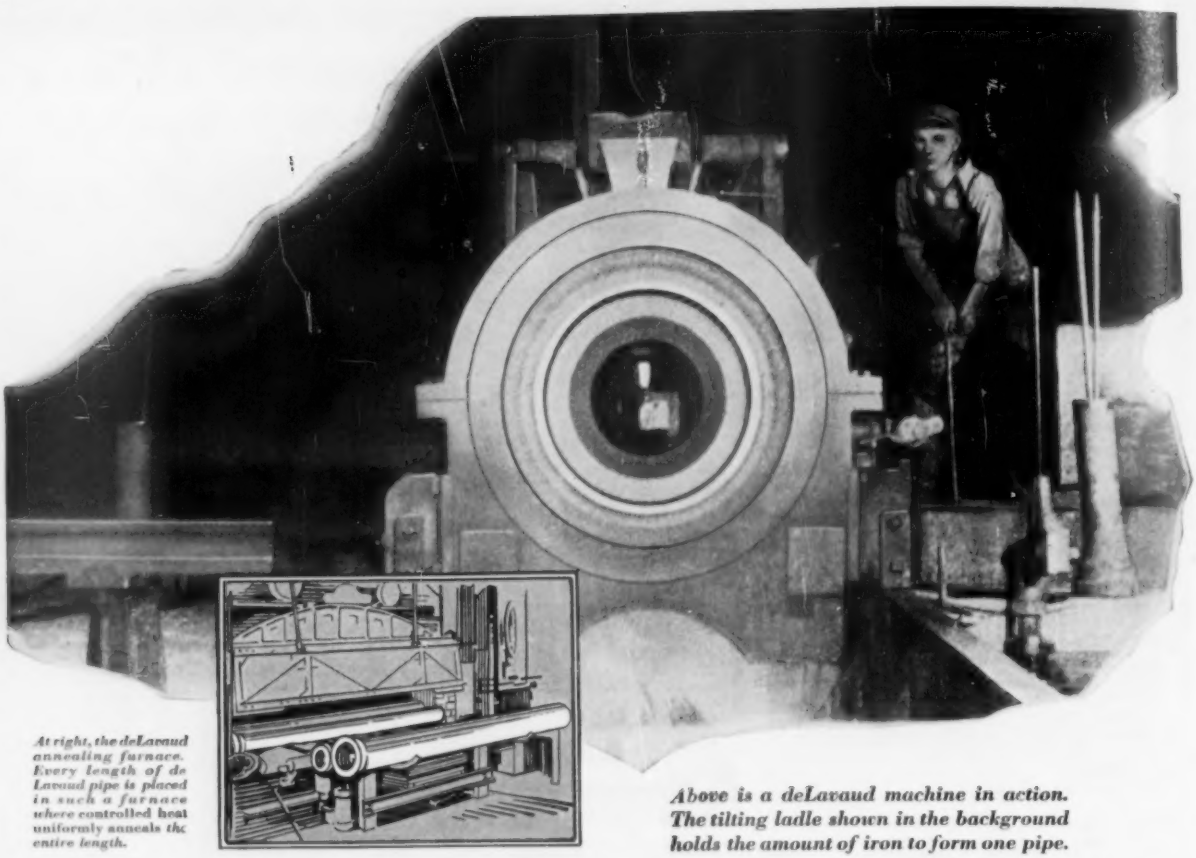
In THE MUNICIPAL INDEX (an 850-page annual volume) readers will find much material, including articles, lists and bibliographies on a wide variety of municipal and civic subjects, not published in the monthly issues of THE AMERICAN CITY

For Index to Advertisements see page preceding back cover.



At right, the deLavaud annealing furnace. Every length of deLavaud pipe is placed in such a furnace where controlled heat uniformly anneals the entire length.

Above is a deLavaud machine in action. The tilting ladle shown in the background holds the amount of iron to form one pipe.

Sturdy, Flexible deLavaud pipe is always uniform in thickness

No chance of deLavaud pipe being "sided." A physical law assures the uniform thickness of the pipe walls. deLavaud pipe is made by pouring molten iron into a rapidly revolving cylindrical metal mold. The revolving action holds the iron against the mold with a force which at all points is equal to 40 times the force of gravity.

Immediately after coming from the machines, every length of deLavaud pipe is annealed in an oven where temperatures are accurately controlled. This controlled annealing is responsible for the flexibility of the pipe metal. It is the reason why deLavaud pipe is free from casting strains and is so satisfactory to cut and tap.

And, when it comes to strength, exhaustive tests by authoritative laboratories have proved that deLavaud pipe will stand 25% more pressure than any other cast iron pipe of equal thickness.

deLavaud pipe is manufactured in accordance with U. S. government specifications. We are also making and furnishing this product in the various thicknesses and weights shown in the specifications of the American Water Works Association and the American Gas Association. Write for complete information.

United States Pipe and Foundry Co., Burlington, N.J.

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Sales Offices:
New York, Philadelphia, Pittsburgh, Cleveland, Buffalo, Chicago, Dallas, Birmingham, Kansas City, Minneapolis, Seattle, San Francisco, Los Angeles

Insistent Questions for Mayors and City Managers

Cities Tackling Unemployment Problem

THE appointment of an Emergency Committee for Employment by President Hoover, with Colonel Arthur Woods at its head, has lent official emphasis to the nation-wide unemployment situation and has made available more information as to the extent of the problem and efforts to meet it. It does not, however, remove the burden of unemployment from the cities, for, irrespective of primary responsibility, the need for action and relief are there. That this need is not being overlooked is attested by the activities of cities everywhere, among them—

New York: A City Employment Bureau is functioning; a police census of unemployed is in progress; the eviction of needy families for non-payment of rent is being halted; the police and other employees are arranging to donate extensively to unemployment relief; Mayor Walker has appointed a Cabinet Committee on Unemployment, to deal with questions of food, clothing, jobs and rent; municipal lodging facilities are being added to. At the same time an effort is being made to prevent a flood of unemployed men from pouring in upon the city.

Chicago: Emergency lodging provided for homeless men and transients; funds transferred to the water-pipe extension department facilitate water-main construction to be followed by street widening and paving, employing 1,000.

Philadelphia: Emergency appropriation of $200,000 made in 1931 budget for family relief by Department of Public Welfare.

Detroit, Mich.: The Mayor's Unemployment Committee is doing notable work, creating and consolidating jobs as well as fostering other activities of the usual sort (see page 104 of this issue).

Cleveland: Over 1,100 men who had been out of work were placed on city street, sewer and park work on October 23, to be followed by a similar number the following week, on a stagger plan under which the men work three days at a time. Council votes $550,000 bonds for plan. Work on the Cleveland Stadium and on the Mall development is expected to utilize 1,000 more men in November. City Manager Morgan has appointed an Unemployment Commission to speed up provision of jobs by citizens.

St. Louis: Mayor Miller appoints committee of business men to supervise unemployment relief work, and proposes ordinance appropriating $200,000 for relief.

Boston: All straight unemployment relief carried by Overseers of the Public Welfare. City has appropriated $1,000,000 additional for this purpose and authorized a popular subscription fund of $2,000,000 for relief not covered by the Overseers. $3,600,000 school construction program helps employment.

Pittsburgh: Emergency relief fund administered by Department of Public Welfare. Six private relief emergencies supply case-work personnel for investigation and allotment of relief. All expenditures for relief reimbursed from city fund. An advisory committee of public officials and representatives of private agencies actively assists. A lodging-house for homeless men has been opened.

San Francisco: Board of Supervisors on October 20 approved construction projects involving $750,000, more than half of which is road and sewer work to be started now. Several hundred men will be employed on this.

Milwaukee: City appropriates $200,000 as a work fund, to be divided among regular city departments, including the Park Board, the Street Sanitation Department, the Bureau of Illumination, the fire and police alarm system, etc., which can utilize more men during the winter than customarily. Each man will work three days a week, at 60c an hour, thus providing for a maximum of 13,500 men, who have to be residents of Milwaukee for at least a year. This fund is expected to operate until March, when the 1931 major improvement program will be under way, requiring the use of much labor. The city assumes responsibility for unemployment relief for all non-resident families and all families of unemployed that are not known to social agencies.

Minneapolis: The welfare committee of the City Council starts a movement for a $1,000,000 program to provide work for 12,000 to 15,000 men every other day. Jobs are to be distributed on the basis of a registration of unemployed taken at all police and fire stations.

Cincinnati: A continuous year-round coordinated campaign is carried on, which has been a guide to many other cities (see THE AMERICAN CITY for April, 1930, pages 113-114).

Toledo: Bond issue of $750,000 for relief wages for part-time work proposed.

St. Paul: The Board of Public Welfare accepts all straight unemployment cases for food and fuel, gives food and fuel orders to families under care of United Charities; has subsidized three private family agencies with $18,000.

Hartford: The Department of Public Charities handles all relief where the need arises from unemployment.

Flint: The City Poor Department supplies the major part of relief funds for all unemployment cases, the Social Service doing the case work.

Salt Lake City: Mayor Bowman appoints an Employment Committee.

Wilmington, Del.: City Council will endeavor to have all possible city work requiring labor of any kind pushed to completion now.

Knoxville: City Council appoints Advisory Unemployment Committee to assist in finding work for 2,500 unemployed.

Racine: Mayor Armstrong appoints a committee representing business, labor, bankers, contractors and the general public to act in the unemployment situation, in cooperation with the Wisconsin Citizens' Committee on Unemployment.

Various smaller cities are known to have authorized or to be considering unemployment surveys, special appropriations, etc., and there are no doubt many other places, large and small, that are taking positive action to meet a widespread emergency. A great deal of relief work by private agencies, and job-finding effort by business or industrial groups, which the foregoing does not attempt to cover, is also going on. Chambers of commerce are taking an active interest and, in addition to stimulating and cooperating with industrial and municipal agencies, are in a number of places sponsoring "Buy-It-Now" campaigns to aid in restoring normal business activity—among such cities being Muskegon, Mich., Youngstown, Ohio, Washington, D. C., and Philadelphia.

Dallas Adopts Manager Plan

THE council-manager plan of city government was approved by a two-to-one vote in Dallas, Texas, last month, making it the 33d city in that state to adopt the plan. Dallas with its population (1930) of 260,397, is the second largest city in Texas and is now the largest city-manager municipality in the Southwest.

The victory for the council-manager plan is particularly the result of an 18-month campaign by the Citizens' Charter Association, carried into the residential and industrial neighborhoods by speakers, many of whom were young lawyers and business men. Women and clergymen also played a large part in its success. The idea was by no means new in Dallas, however, for it was broached twelve years ago by *The Dallas News* and has been especially advocated by Louis P. Head, of the staff of that paper and a member of the council of the National Municipal League.

Several cities vote on the manager plan at the November 4 election, including Lexington and Newport, Ky., and Oakland and Ventura, Calif. Jamestown, N. Y., is considering the plan, at Mayor Carlson's suggestion, and in Philadelphia the City Charter Committee has opened headquarters for a city-manager campaign.

What modern design has done for elevated water tanks

THE illustration contrasts the old and the new in water tank design . . . a standpipe contrasted with a Horton ellipsoidal bottom tank, 250,000 gallons capacity, 110 feet to bottom.

Such a contrast strikingly emphasizes modern efficiency in municipal engineering. A Horton shallow-depth elevated steel tank is "modern" because experience in large and small cities has shown that adequate elevated storage often improves results with least first cost and annual costs. It avoids the necessity for excessive stand-by pumping equipment; it permits pumps to operate at uniform rates, thereby increasing efficiency and reducing peak-load power charges.

It is also "modern" because the shallow-depth design gives the least difference in pressures to pump against—in short, gives the greatest effectiveness at least cost. With the Horton tank design, all the water is available at effective pressures; with the standpipe only the water at the top of the structure is effective—the rest does not flow into the system at sufficient pressure to be of service.

Horton shallow-depth tanks in capacities up to 2,000,000 gallons are in service all over the country. We are prepared to build tanks of even larger size. Our experience is at the disposal of waterworks engineers and municipal officials, and we will gladly furnish estimates on tanks. Please address our nearest office.

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Chicago	2127 Old Colony Bldg.
New York	3108 Hudson Terminal Bldg.
Cleveland	2236 Midland Bank Bldg.
Detroit	1501 Lafayette Bldg.
Philadelphia	1616 Jefferson Bldg.
Boston	1501 Consolidated Gas Bldg.
Birmingham	1502 Fiftieth St., N.
Dallas	3306 Magnolia Bldg.
Atlanta	2114 Rhodes-Haverty Bldg.
San Francisco	1033 Rialto Bldg.
Seattle	4343 Smith Tower
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Tulsa	2425 Exchange Bank Bldg.
Havana, Cuba	Apartado 2507

HORTON TANKS

AC-11-Gray

Pure Water—Man's Greatest Need

Items on Water Supply and Purification

She Couldn't See Why

IN VIEW of the recent unprecedented drought throughout the United States, the following item from "The Woman Who Sees" in the New York *Sun* is particularly timely:

"In spite of repeated warnings against the waste of water, a young wife, during the long dry spell, continued to let it run needlessly. 'Don't you know, honey,' hubby admonished as he again turned off the faucet in the kitchen sink, 'the water is very low?'

"'Who said so?' retorted his pretty mate with a tantalizing shake of her head.

"To which the spouse replied that the water company had informed the public there was hardly any water.

"'Piffle!' she said. 'Can't be so low as all that. Only this morning I read in the paper a man fell into the reservoir and drowned because he couldn't swim —so there.'"

Detroit Adds to Its Welded Pipe Line

THE Department of Water Supply, Detroit, Mich., has just awarded another large contract for electrically welded pipe. This was one of the first municipal departments in the world to take advantage of the large carrying capacity of welded pipe coincidentally with the consideration of more durable material for the important pipe lines on the basis of estimated service life. The latest contract calls for 2,100 tons or 12,700 feet of electrically welded Armco ingot-iron pipe.

A contract for furnishing and laying this pipe line was awarded to A. Phelps & Son, Detroit, and the pipe will be fabricated by the United Welding Co., Middletown, Ohio. The design, which calls for ½-inch plates 122 x 173¼ inches and 122 x 212 inches, has been formally approved by the Department of Water Supply.

An unusual design, unique in welded pipe construction, will be employed by the fabricators of this line. The pipe will be delivered in 40-foot lengths for the 54-inch pipe and 30-foot lengths for the 66-inch pipe. The 40-foot lengths, which are 33⅓ per cent longer than the standard, will be made of four plates. In 7,100 feet of 54-inch pipe, this increase of 10 feet per section will result in a large reduction of field joints, with accompanying economy in field work.

Although of welded construction, the pipe will be formed like riveted pipe. Plates of pure iron, ½-inch thick and 122 inches wide, either 173¼ or 212 inches long, will be rolled so that one plate will go entirely round, forming a complete ring of pipe. Four of these rings, in the case of the 40-foot section, will be lap-welded in the shop. This design was first used in the installation of 9,300 feet of this pipe in May, 1929, at Detroit and again in November, when 9,000 feet was laid.

The circular seams, lapped approximately 1½ inches, will be welded inside and out, while the longitudinal seams will be butt-welded. In and out courses will be used throughout each section of the pipe. The sections will be carefully tested for tightness and the surface thoroughly cleaned and dipped in protective coating before shipment.

This combination of the old design and its new application gives a pipe that is unusually stiff because of the lap-welded circular joints, making it possible to place the pipe under deep fills without angle reinforcing rings. Another inherent advantage is the fact that plate metal pipe is not subject to sudden breaks which cause serious interruption to service and great damage to streets and adjacent property.

The order, which totals over $432,000, calls for 7,100 feet of 54-inch pipe and 5,600 feet of 66-inch pipe, or a total of 12,700 feet, bringing the order to a total of 2,100 tons.

The laying of this welded pipe line began in September. It will be laid on Central, Whittaker, Beard, Fort and Post Streets between Edwards and Jefferson Streets.

GEORGE H. FENKELL,
Superintendent and General Manager, Department of Water-Supply.

Artificial Lake Used for Water-Supply and Recreation

THE water-supply for Wichita Falls, Texas, is taken from an artificial lake, 5 miles from the city and covering 2,300 acres. The city owns only to the water's edge at the spillway level. As this is the only body of water of any size within easy reach, the city has been rather lenient toward its use for recreational purposes. Boating, fishing and hunting are permitted and no fee is charged. No regular policing of the lake is maintained. Through a generous use of signs, people are made conscious of the fact that their carelessness may seriously pollute their own drinking water. So far, the city has been successful in securing prosecutions in cases filed against people for pollution of the water-supply.

It is now realized that the city has been too lenient in the matter, and plans are under way for the diversion of much of the watershed pollution and a more strict regulation of the recreational use of the lake. It is felt that limited recreational use of a public water-supply under strict regulation need not be hazardous.

A. H. DOUGLASS,
Manager, Water Department.

Ohio Village of 350 Has Water-Softening Plant

LEROY is the smallest village in the state of Ohio having a water-softening plant. It has a population of 350. The original supply consisted of well water with an iron-removal plant. This served for a few years, until in 1926 the iron content of the well water had dropped to 0.8 p.p.m. from an original 8 p.p.m. The raw water has a hardness of 570 p.p.m., 400 parts of which is carbonate. A softer water was desired and a small plant treating about 25,000 g.p.d. on the intermittent basis was constructed using the original iron-removal plant as a nucleus. The softened water has a hardness of about 85 p.p.m.

Chemical equipment consists of solution tanks and ejectors for applying solutions to the mixing tanks. Air agitation is employed during the period while the tanks are filling, and is continued so that the mixing period lasts for about 2½ hours. The tanks are operated on an intermittent basis. Supernatant water is drawn off through a 3-inch suction hose. As no provision has been made for recarbonation, the sand in the filter is becoming somewhat incrusted. As the quality of the raw water is practically constant, the method of treatment without technical supervision is giving very satisfactory results.

—From a paper by A. E. Kimberly, consulting engineer, Columbus, Ohio, read before the Ohio Conference on Water Purification.

Water and Light Bills Combined for Collection

IN Peterborough, Ont., water bills are issued bi-monthly on a flat-rate basis. Ten days are allowed for payment, and a discount of 10 per cent is allowed if paid within this time, after which the discount is canceled and the gross amount must be paid.

Ten days after the last discount date, the arrears are listed and the first delinquent notice sent out. Ten days later a second notice is sent, and, if the bill is not paid ten days later, a cut-off order is issued.

As the municipal electric and waterworks systems are under the one authority, the bills for the two services are combined in one, and both services are disconnected for arrears in either. Disconnection of the electric light usually brings in the water arrears as well.

Should a tenant default in payment of water rates, the owner of the property becomes liable for the arrears and they may be collected as taxes.

R. L. DOBBIN,
General Manager, Peterborough Utilities Commission.

Is Your City SAFEGUARDED

By An Adequate Water Supply

For domestic purposes, safe sanitation, successful fire-fighting, industrial demands—all purposes. Each city official is directly responsible for lack or failure of supply and its probable consequent disaster.

Layne Pump and Well Systems, designed and built by men who have devoted a lifetime to this one task, have solved the problem for hundreds of cities. No requirement is too small or large for careful study and recommendations.

There is a Layne company near you and its motto is "SERVICE."

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New York, N. Y.

Layne North Central Co.
Chicago (Forest Park), Ill.

Layne France Co.
Paris, France

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Toronto, Ontario

Harmon-Ness Co.
South Bend, Ind.

Layne-Western Co.
Kansas City, Mo.

Layne-Northwest Co.
Milwaukee, Wisc.

Layne-Ohio Co.
Columbus, Ohio

Layne-Atlantic Co.
Norfolk, Va.

International Water Corp.
Buenos Aires, S. A.

Layne-Central Co.
Memphis, Tenn.

Layne-Arkansas Co.
Stuttgart, Ark.

Layne-Texas Co.
Houston, Texas

Layne-Louisiana Co.
Lake Charles, La.

Saigon, Indo-China
Torreon, Mexico

ANDERSON L. McCANDLESS
Supt., Water Dept.
Euclid, Ohio
(Appointed 1926)

CHARLES P. ABRAHAM
Supt., Bureau of Water
Lancaster, Pa.
(Appointed 1930)

JACOB S. BESTERMAN
Supt., Water Works
Sewickley, Pa.
(Appointed 1907)

MARK B. WHITAKER
Engr., Water Dept.
Knoxville, Tenn.
(Appointed 1928)

HUGH B. RICE
Supt., Water Dept.
Staunton, Va.
(Appointed 1930)

Who's Who in Water Supply

The 35th of a Series of Portraits of Water Works Officials Which Has Apepared Monthly Since January, 1928

GEORGE W. HENRY
Supt., Water Works
Le Roy, N. Y.
(Appointed 1930)

CORNELIUS W. McWILLIAMS
Supt., Water Works
Carthage, N. Y.
(Appointed 1914)

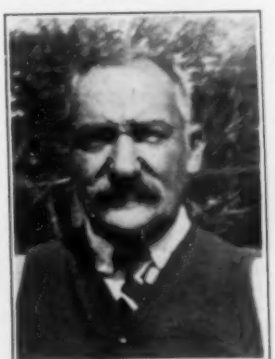
JAMES F. HAMILTON
Supt., Water Works
Waukesha, Wis.
(Appointed 1929)

GRANT S. ALLEN
Supt., Emporium Water Co.
Emporium, Pa.
(Appointed 1914)

JOHN W. HORAN
Supt., Del. River Water Co.
Beverly, N. J.
(Appointed 1914)

G. C. CULBERSON
Mgr., Water Works
Raton, N. Mex.
(Appointed 1927)

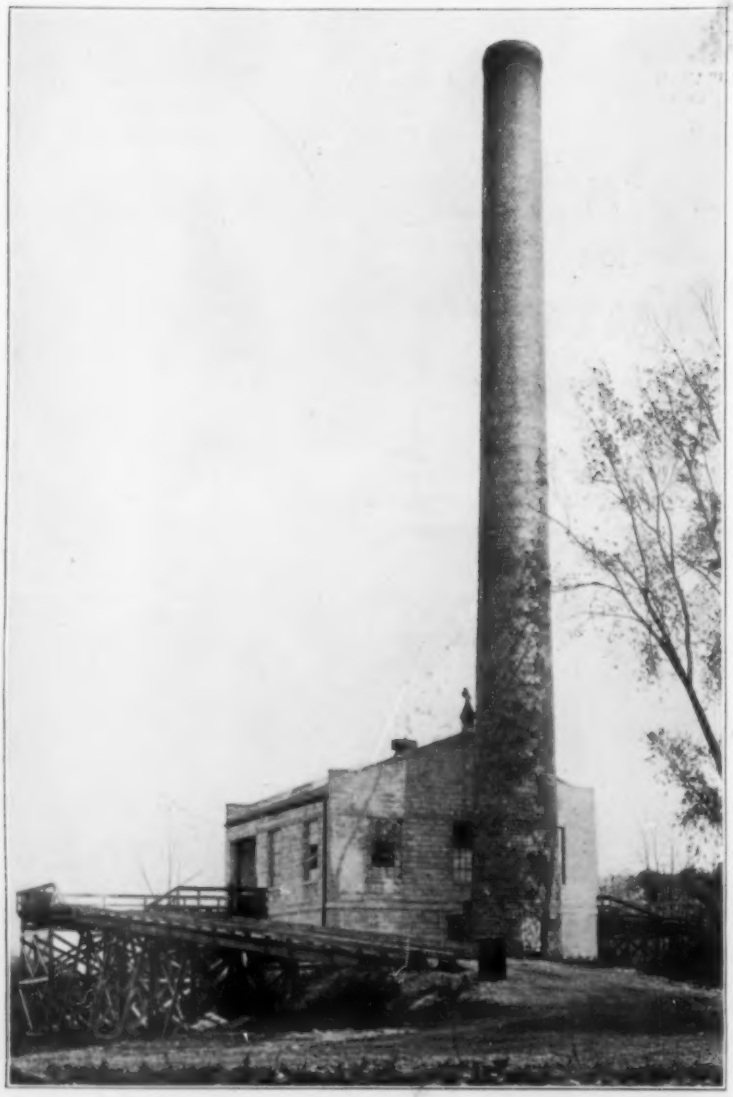
WILLIAM H. CLARK
Supt., Water Works
Avon, N. Y.
(Appointed 1903)



JOHN H. SENN
Water Superintendent
Egg Harbor, N. J.
(Appointed 1926)

EDWARD E. SNYDER
Dist. Supt., Toms River Water Co.
Toms River, N. J.
(Appointed 1898)

PDM Incinerators Permit Selective Charging, are "Foolproof" and Simple to Operate



This modern PDM destructor erected for the city of Wauwatosa, Wisconsin, has a daily capacity of 80 tons of refuse and garbage.

Would you buy a car with a single speed, or with selective gears?

Will an incinerator with one charging hole, or a modern scientific plant with several charging holes best serve *your* community?

The "Pittsburgh-Des Moines" Incinerator Plant permits selective charging of wet garbage to that particular cell of furnace then ready to receive and dry it out. This selective charging through several holes breaks up the garbage into smaller piles or cones. The maximum surface areas are thus exposed to the hot gases—compared to the smaller single surface area of one unwieldly single pile offered by single charging. The furnace volume of the PDM plant is equal to or larger than any other incinerator of equal daily capacity.

The operation of a municipal incinerator plant (after the official tests and acceptance are completed) is usually in the hands of unskilled labor. Incinerators should, therefore, be simple to operate and "foolproof." The PDM plant is designed and erected in recognition of these practical operating facts.

A new 24-page booklet containing data and information on municipal garbage disposal by incineration will be mailed to you upon request. No charges or obligations. Simply request booklet No. 79.

Pittsburgh-Des Moines Steel Company

3481 Neville Island, Pittsburgh, Pa. **685 Hudson Terminal Bldg., New York, N. Y.**

Des Moines **San Francisco** **Seattle** **Chicago** **Atlanta** **Dallas**

Sewage Treatment Means Clean Streams

SEWERAGE and SEWAGE DISPOSAL

Paying for Sewage Disposal

AFTER nearly five years of experience with the Connecticut law in attempting to remedy Connecticut's pollution problem in the rivers of the state and Long Island Sound, the only conclusion possible is that further material progress cannot be expected until a broader and more intelligent view of the whole problem is adopted.

Connecticut cities are limited in their capacity to borrow, to 5 per cent of the grand list. Out of this money must be financed all public undertakings. It therefore follows that the development and maintenance of the sewerage system is dependent upon securing adequate funds in competition with more popular and equally necessary undertakings, such as schools, development of parks, highways, police and fire departments and welfare work.

As few are concerned with what becomes of sewage as long as it is removed from the individual's premises, the sewerage system is provided for only after the wants of all others are met, with the result that it has always starved and is always lagging in its development many years behind the general development of the community.

Our experience in Connecticut indicates that unless this question of disposal of sewage is looked upon as an essential public utility, just as is the supply of a pure and wholesome water, little improvement in the present unfortunate situation can be expected.

On the other hand, if we admit that the supplying of pure water and the removal of that water after it has been converted into sewage by the householder is one continuous operation and that each part of this operation is as important as the other, then it would be logical to admit that each step in the operation should be financed in the same manner.

A proper conception of the whole subject would be to provide that the householder should pay for sewage removal in exactly the same way that he pays for the water supplied him, and on the same basis, that is, by a rate so fixed that it will bear the cost of the service so rendered.

SANFORD H. WADHAMS,
Director, State Water Commission, Connecticut, in the *U. S. Daily*.

Activated Sludge Process at Horton, Kans.

AT Horton, Kans., the sewage from 3,840 people is disposed of without nuisance at a site quite near the city. This plant is operated by one man, who visits the plant twice each day, spending an average of 1½ hours on each trip in cleaning screens, looking after the machinery, and so forth. Extra help is provided for sludge handling and special work. Power consumption amounts to 28 horsepower per million gallons, and the total cost of operation, inclusive of fixed charges, amounts to $68.50 per million gallons.

Unfortunately, no routine tests are made here and no records kept other than of sewage flow and power consumption, so that the efficiency of the plant cannot be determined. It is, however, serving its purpose in that the nuisance in the stream has been abated and the plant is operating without odor. Occasional tests made by the state health authorities indicate that the effluent is stable and has from 15 to 25 p.p.m., b.o.d.

The plant was constructed in 1927 at a cost of $40,000. Operating cost and supervision for 1929 were $500; power cost, $1,258.50; and maintenance and repairs cost $500. With an additional $3,488 for fixed charges, the total cost for 1929 was $5,746.50, or $68.50 per million gallons.

F. M. VEATCH,
Black & Veatch, Consulting Engineers, Kansas City, Mo.

Experiments in Sewage Treatment in Germany

SOME very interesting experiments on stage operation of sewage-treatment processes were started early in August, 1929, by the Ruhrverband, Germany. One series comprises three paddle-wheel aeration tanks with settling tanks between each two aeration units. A total aeration period of 2½ hours is being used. The volume of air required is about half the volume of sewage treated, or 0.07 cubic feet per gallon. Another series of tanks consists of three stages of submerged contact aerators with settling tanks between stages. A total detention period of 1.5 hours is being tried. The racks, instead of hanging vertically, are fixed on pivots so that they may be suspended at a small angle from the vertical. They are turned from time to time so that either side may be exposed to the air.

Different materials are being tried as contact surfaces in the submerged contact aerators. Pieces of cork two or three inches in diameter are being used. When in operation the cork is held down by a wire netting. When the wire netting is removed the cork floats and cleans itself. To replace the cork the netting must merely be fastened down. At Iserlohn burlap-covered frames were being installed.

A modified Dorr clarifier under construction will contain a deep sump in the center large enough to permit sludge accumulations of 10 to 11 hours. It is proposed to add ripe sludge intermittently to the sump in order to prevent acid digestion during the storage period.

G. P. EDWARDS,
Principal Assistant Chemist, Sanitary District of Chicago.
Sew. Wks. Jour.

Financing Sewage Treatment in Iowa

SEWAGE disposal is becoming of greater interest to the larger cities and towns of Iowa each year and with this increased interest there arises a natural desire to investigate the financing possibilities.

Any Iowa city or town may legally construct sewage-treatment plants. Such plants, in the eyes of the law, are considered as part of the sewerage system and they are financed in the same manner as that provided for sewer systems. They may be constructed as a part of and in the same contract with the sewer system or they may be built later as an addition to the system. Municipalities have the right to establish sewer districts by ordinance. A city may be divided into several such districts or the entire incorporated area may be included in one district. All the territory in a sewer district may be assessed for the cost of constructing the sewage-treatment works.

HOWARD R. GREEN,
President, H. R. Green Co., Consulting Engineers, Cedar Rapids, Iowa.

Three Reasons for Laying Sanitary Sewers in Center of Street

IN Lewiston, Idaho, three reasons are given for the practice of laying the sanitary sewers in the center of the streets.

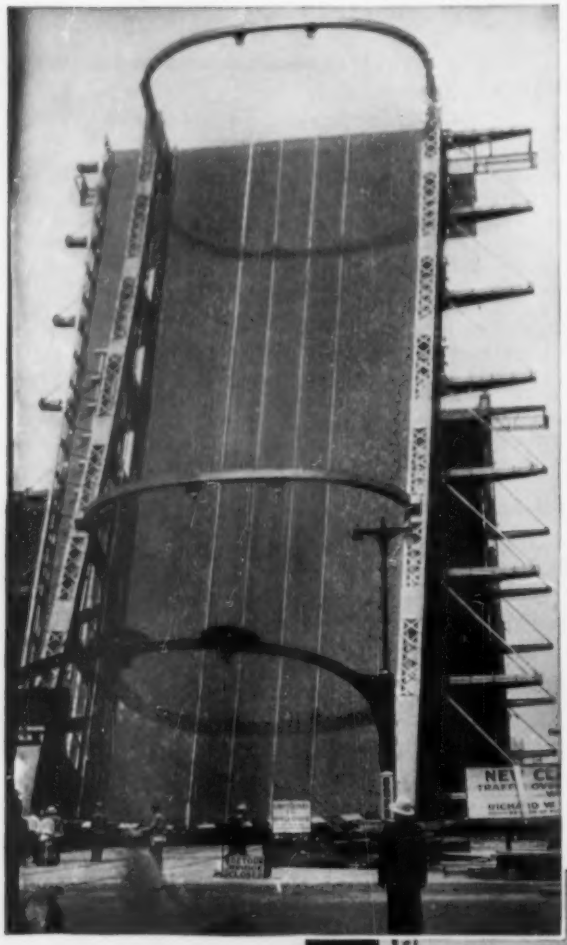
First, to eliminate trouble from root swelling. In the park strip between the sidewalk and the curb where trees are planted, considerable trouble is experienced from tree roots entering the joints of the pipe. By placing the sewer in the center of the street, this trouble is minimized.

Second, the property owners are required to pay for sewer connections from the main sewer line. By placing them in the center of the street the cost is distributed equally on both sides of the street. The alternative to this would be a dual system, which is not favored because of the increase in maintenance costs.

Third, the park space at the sides of the streets is reserved for concrete storm sewers and in some cases for dual water systems. It is not considered good practice to lay water and sewer lines too close together, because of the damage of one to the other in case of a weak trench, and because of the danger of contamination to the water-supply from sewage getting through the joints of the water-pipe.

W. P. HUGHES,
Water Superintendent.

Once More SERVICISED Fibrated Asphalt Planking Is Selected for a Chicago Bridge



To be a Chicago River Bridge is to have a real job, handling the pound of heavy traffic, with seldom a chance to rest a minute by getting up to stretch.

Some bridges have their choice of traffic, mostly the *bon-ton* kind with soft, speeding rubber cushions for wheels. Not so on Clark Street, Chicago. There, if you are the bridge crossing the main stretch of the river, north and south, you must be tough, strong and patient, with real stability, and with ability to stand the gaff,—the jar and pound, all of every day and night, hour after hour, of thousands upon thousands of wheeled vehicles —all kinds.

There they stream, head to tail,—passenger cars, Fords and rattlers; ten-ton motor trucks and five-ton wagons pulled by two tons of horseflesh; double truck sixty foot street cars with the "hoi polloi" jamming them to the roofs and hanging on somehow. Thud, crash, bang,—sunrise to sunset, sunset to sunrise, and the end of the business day worst of all.

That's why the engineers said, "Put Servicised Fibrated Asphalt Planking on Clark Street Bridge." It will stand the gaff. It's not slick or slippery; it's waterproof; it deadens noise and vibrations; it's economical, wears a long time and smooths out and heals itself under traffic.

And the new Clark Street Bridge will have an easier time than the old one, though it must take more abuse, all because it's covered with Servicised Fibrated Asphalt Planking.

The makers will be glad to tell you more about it.

SERVICISED QUALITY PRODUCTS

Expansion Joints for Roads, Streets, Sidewalks, Buildings
Fibrated Asphalt Plank for Bridges, Runways, Platforms
Highway Crossing
Rail Filler and Track Insulation
Sewer Pipe Jointing
Industrial Flooring
Waterproofing

SERVICISED PREMOULDED PRODUCTS, INC.

PAT. OFF. © 1918 REG. U.S.

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GENERAL DISTRIBUTORS For Products Manufactured By
Factory 6051 W. 65th St. CHICAGO, ILLINOIS
SERVICISED PRODUCTS CORPORATION
DISTRIBUTORS and DEALERS IN PRINCIPAL TRADING CENTERS

Construction and Maintenance

Engineering and Highway Departments

Pipe Jacked 180 Feet to Replace Culvert

THE famous Midland Trail, extending across the state of West Virginia from White Sulphur Springs to the Ohio River, is located in part on old railroad grades. The 10-mile section between Barboursville and Milton is built on the grade established by the C. & O. Railroad in 1872 and purchased by Cabell County in 1912.

At one point a skewed masonry box culvert, 235 feet long, that had seen many years of service, broke down and could not be reopened. Water had ponded against the fill, and silt had washed into the culvert until the inlet was buried many feet below the existing ground level. This condition endangered the stability of the roadway, and steps were taken to remedy it by providing a new drainage outlet.

Because the fill height was approximately 50 feet, open trenching to place the pipe would have been prohibitive and would have necessitated breaking the pavement and disturbing the compacted roadbed. It was decided to employ the Armco jacking method, using 180 feet of 48-inch Armco paved invert corrugated iron pipe. This method consists essentially in forcing corrugated metal pipe through an embankment or underground by means of one or more horizontal jacks braced against a suitable backstop. The pipe is jacked through as a shield, following excavation by men working inside and removing spoil through the pipe.

Work was started on July 25, 1929, in preparing the backstop, bearing frame and guide timbers and in initial excavation from the downstream side. A grade of 12 per cent was established on the line of the proposed installation and was maintained throughout by frequently checking the elevation at the front end of the pipe as the excavation progressed. Jacking uphill from the downstream side had the advantage of permitting excavated material to be removed by gravity and also prevented flooding the pipe.

As excavation proceeded, the material changed from ordinary soil to shale and soft rock, which was found for a distance of 118 feet. Excavation was accomplished by drilling and blasting except where the shale was soft enough to permit the use of a clay spade. Spoil was removed in a small car pulled on a 2 x 10-inch plank laid in the invert of the culvert pipe. Two men were able to work within the pipe, one excavating ahead with the hand spade or preparing the shot, the other loading the car with spoil.

Excavation preceded the pipe by about 2 to 3 feet. For about 135 feet two 15-ton jacks provided sufficient power to force the culvert ahead, but when the pipe reached the last few feet of fill, composed of cinders and other unstable material, it was necessary to use two 50-ton jacks. Each section of pipe was 20 feet in length, and connections were made by field riveting.

Work was carried on day and night, including Sundays, and was finished on August 21, or in 26 working days.

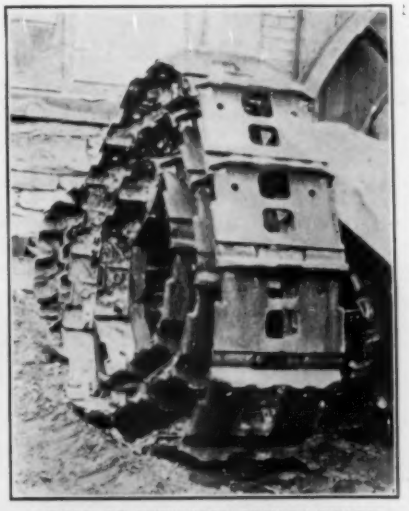
E. G. MIDDLETON,
District Engineer, West Virginia State Road Commission.

A Michigan County Retreads Its Tractors for Winter Service

A COUNTY road commission in Michigan recently made an interesting test on the use of a hardened steel tread on its crawler tractors. These tractors are used in winter maintenance work and have to travel over very rough and abrasive ground, particularly during the winter. During the severe winters which are experienced in that region, these tractors are used on plow service and the ordinary treads soon wear down. The average life of the ordinary steel treads was one winter of service, and a set of new treads cost about $700. The Highway Commission was anxious to save this annual replacement charge and made arrangements to have Haynes Stellite applied to this wearing part.

Each cleat of the tread was Haynes-Stellited in four places as shown in the illustration. The advantage of applying the material in this manner was not only that of economy in the use of the Stellite, but also because better traction was obtained. The driver of the tractor liked this tread better than the original steel because this method of applying the abrasive resistant prevents any slippage when the tractor is traveling over slippery ground. The new cleat has four projecting points which give each cleat a much better grip on the ground.

The cleats on the winter treads for one of these 10-ton tractors were treated in 10½ hours using 6.4 pounds of the Stellite rod for the job. Each set for a tractor had 58 treads in all. The total cost for the work on one set of treads, including the cost of the Stellite, oxygen and acetylene and labor, was less than 7 per cent of the replacement cost.



A ROLL OF STELLITED TREADS READY FOR SERVICE THIS WINTER

After a winter of service there was still sufficient of the abrasive resistant tread left on the cleat so that the tread could be used for another winter. It would usually be advisable, however, to make another application of the material over the old application so that the treads would be well built up. As a result of these tests the road maintenance foreman recommended to the maintenance engineer that in the future all of the treads to be used on winter snow tractors be treated in this manner for longer service.

Testing Materials for Road-Making

A LABORATORY where tests are made of every item of material used in road construction is maintained by the Pennsylvania Department of Highways.

During one month the laboratory tested and analyzed 13,469 samples of asphalt, tar, sand, stone, paint, cement, steel, concrete and miscellaneous materials.

A physical laboratory tests the strength of steel, stone, sample beams for new highway pavement, guard cable and many other items.

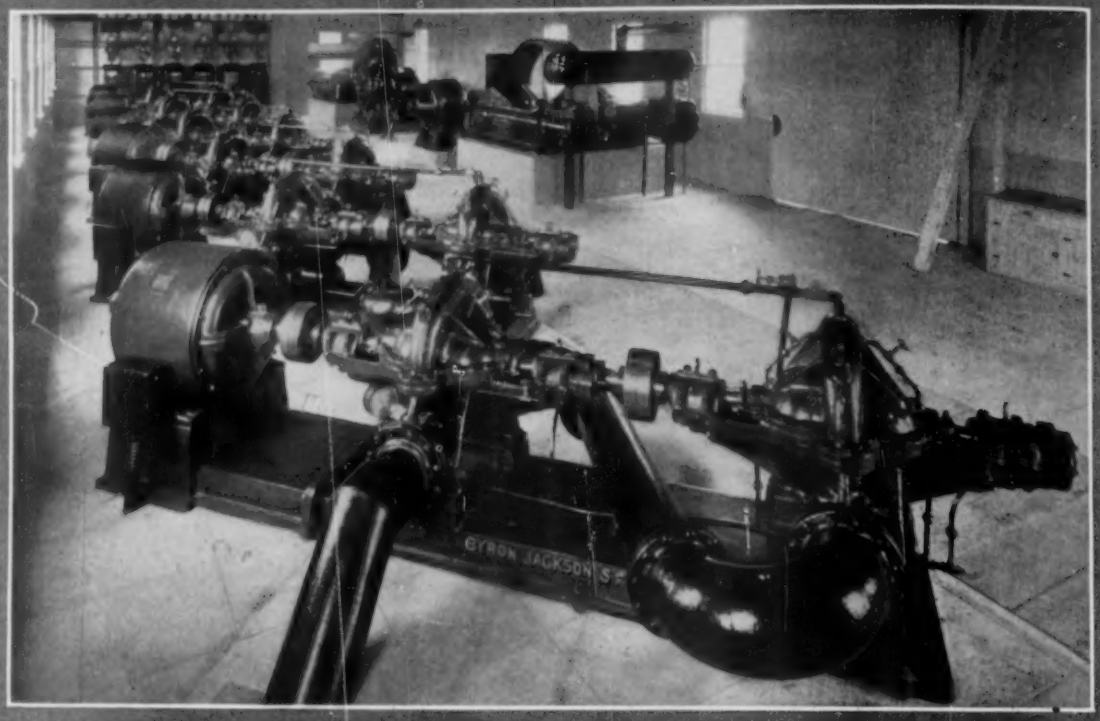
The new laboratory is fitted with the most modern and specially adapted equipment available. A research laboratory is used to improve existing standards and study various problems entering into highway construction, maintenance and operation. Design of road markers, signs and safety devices is a function of this branch, which also tests guard rail under actual conditions. The visibility of paint and its wearing qualities when used for markers on pavements are closely scrutinized by test engineers. This laboratory originated the practice of chemically treating cinders for use on icy highways so that they become imbedded in the ice and provide a tractive surface.

SAMUEL ECKELS,
Chief Engineer, Pennsylvania Department of Highways.

A. S. M. I. Changes Name

BY a unanimous vote of the Board of Directors, the American Society for Municipal Improvements, at its recent convention in Richmond, Va., changed its name to the American Society of Municipal Engineers.

Water Works Pumps



For many years Byron Jackson pumps have been standard equipment for medium and high pressure water works pumping. Byron Jackson Type "S" Pumps are supplied for conditions within range of single stage units. These pumps may be used in series, as shown here, when it is desired to obtain high efficiencies for certain operating conditions. Type "S" Pumps are built in a complete range of sizes and are the last word in mechanical reliability and hydraulic efficiency.

SINCE 1872

BYRON JACKSON CO.

Factories: BERKELEY, Los Angeles, Visalia, Calif.

Branches: NEW YORK and CHICAGO

San Francisco, Portland, Salt Lake, Tulsa, Dallas, Phoenix

BYRON JACKSON

CENTRIFUGAL PUMPS FOR EVERY SERVICE

HARRY J. WIGHT
City Engineer
Knoxville, Tenn.
(Appointed 1928)

GLEN R. BLACKBURN
City Engineer
Corpus Christi, Texas
(Appointed 1929)

E. R. SMITH
County Engr., Walla Walla Co.
Walla, Walla, Wash.
(Appointed 1925)

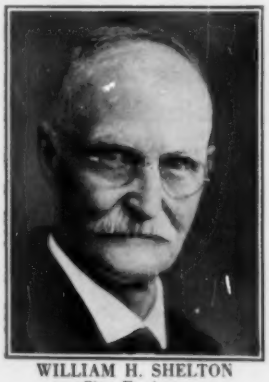
JOHN J. JESSUP
City Engineer
Los Angeles, Calif.
(Appointed 1929)

CHRISTOPHER H. TEESDALE
City Engineer
Cleburne, Texas
(Appointed 1924)

Who's Who in City & County Engineering

One of a Series of Portraits of Engineering Officials Which Has Appeared Monthly Since April, 1928

W. J. JAMIESON
City Engineer
Phoenix, Ariz.
(Appointed 1926)



WILLIAM H. SHELTON
City Engineer
Dunkirk, N. Y.
(Appointed 1913)

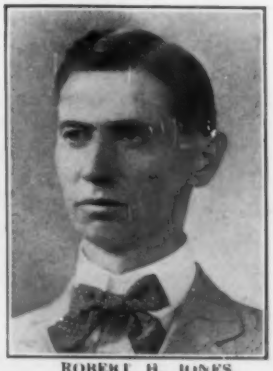
E. C. BARTON
City Manager
Bluefield, W. Va.
(Appointed 1929)

CHARLES C. KELLY
City Engineer
Klamath Falls, Ore.
(Appointed 1927)

GALEN J. JASPER
City Engineer
Fergus Falls, Minn.
(Appointed 1926)

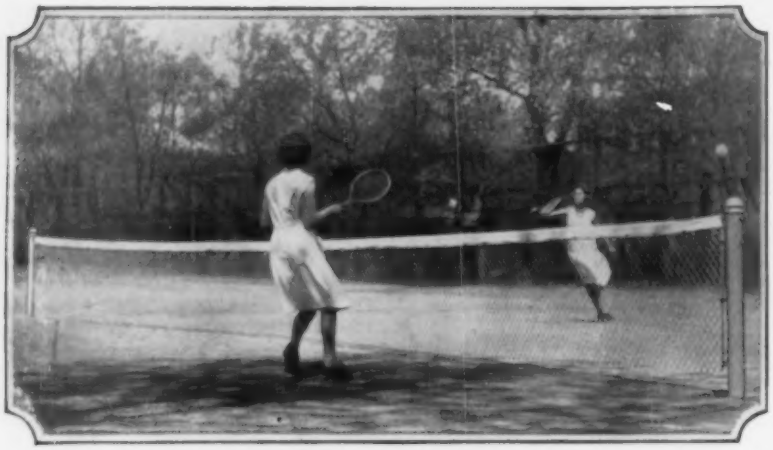
RALPH E. BORROWMAN
City Engineer
St. Cloud, Minn.
(Appointed 1928)

ARTHUR P. HEYER
Director of Public Works
Montclair, N. J.
(Appointed 1924)



ROBERT H. JONES
City Engineer
Independence, Mo.
(Appointed 1921)

TIMOTHY McCORMICK
City Engineer
Lackawanna, N. Y.
(Appointed 1926)



AMERICAN CHAIN LINK TENNIS NET

Patent Applied For

IS IT REALLY PRACTICAL? YOU ASK

Perhaps These Letters Will Answer Your Questions

Department of Parks, St. Joseph, Mo., Wrote July 25th:

"The chain link tennis nets are very satisfactory . . . they are a fine improvement and a big advance in the net line."

Board of Public Recreation, Tampa, Fla., Wrote July 22nd:

"The outfit is giving complete satisfaction . . . . I feel confident that we shall equip all of our public courts with your net."

Board of Park Commissioners, Large Metropolitan City (Name on Request), Wrote Recently:

"Your chain link tennis net has been seeing service for well over a month now . . . I have noticed that there are players on this court when the other courts are vacant."

Shorewood Public Schools, Milwaukee, Wisc., Wrote August 12th:

"The chain link tennis net has been working out very satisfactorily."

Birmingham, Ala., last Spring tried one net. Two weeks after its installation that city ordered thirty-one more . . . equipping practically every city court with American Chain Link Tennis Net. Installations have been made throughout the nation . . . from coast to coast and from Canada to Mexico . . . without a single complaint being made. Investigate the definite and decisive advantages of this revolutionary net for the tennis courts in your city parks, playgrounds and schools. Write today!

American Wire Fence Company
7 South Dearborn Street, Chicago, Illinois

This Steel Wire Tennis Net . . . Conforming Exactly to the Rigid Specifications of the U. S. L. T. A. for Championship Cord Nets . . . Is Made by an Old, Nationally Known Organization of Unquestioned Financial Responsibility

A Revolutionary Money-Saver for Parks, Playgrounds and Schools

ADVANTAGES SUMMARIZED BRIEFLY:

Embodies all the advantages of a good cord net.
Installation is permanent . . . but posts and net can be furnished for Winter removal if tennis court space is required for other recreations then.
Eliminates daily erection and removal . . . an item of considerable cost for labor and trucks.
Not affected by rain, snow, sleet, heat or violent changes in temperature.
No upkeep or maintenance cost . . . the canvas strip across the top of net being the only part that will need replacing from year to year.
Height never varies . . . a fact that appeals greatly to tennis players.
No reel to bother with; does not tear or wrap; thereby beautifying your tennis courts.
Tests prove that net cannot injure or cut tennis ball, as some people thought.
Preferred by tennis players themselves . . . as letter quoted above proves.
PAYS FOR ITSELF THE FIRST YEAR.

IDEAS EXPRESSED at the NATIONAL RECREATION CONGRESS OCTOBER 6-11

Individual Administration Passing

I BELIEVE that recreation will soon become a state function, the same as education is at the present time. Existing recreation machinery will be markedly modified; control will be more democratic—because a larger number of minds will be involved.

L. H. WEIR,
National Recreation Association, New York.

City planning offers a great hope for recreation that it never had before.—LEE F. HANMER, *Russell Sage Foundation, New York.*

Should Tax-supported Departments Conduct Experimental Programs?

FROM a questionnaire sent to 50 recreation executives in towns under 50,000, I had 30 returns, two-thirds of which register the sentiment that we should spend tax money for experimentation only when we are pretty certain that the experiment will grow into an activity that will reach many citizens. Five believed in experimentation for the good of nation-wide progress, and took the stand that *if we didn't do it—who would?* Three said flatly: No; public money should not be used for experimentation purposes. Two said that after the general program was well established and thoroughly enriched with all essentials, we should then be free to use money for new experiments. (These two I think the best.)

RUTH SWEZEY,
Superintendent of Recreation, York, Pa.

*The Rating of Cities in Recreation**

THERE are many values to be received from a *measuring stick* in recreation. It gives you the pooled experience of experts in your field, pointing out important factors not to be overlooked.

It acts as a self-check, presenting opportunity for publicity which is of great value in securing public support.

It is a mark to shoot at and should tend to broaden your program to meet the needs of the community.

The following are important factors to be considered in the rating of cities in recreation:

1. What should be the acreage of open spaces and facilities per 100 inhabitants?
   a. Type
   b. Distribution
   c. Acreage
   d. Development
2. What are the vital points in the personnel of your staff
   a. Qualifications
   b. Training
   c. Number—paid and volunteer
3. What constitutes a good recreational program?
   a. Quality
   b. Scope
   c. Variety
   d. General participation
4. What is necessary to a successful administration?
   a. Sound set-up
   b. Organization
   d. Efficient leadership
5. What are the important points of a financial budget?
   a. Capital outlay
   b. Basis of appropriation
   c. Budgeting
   d. Cost covering activities

R. W. ROBERTSON,
Superintendent of Recreation, Oakland, Calif.

Sound Public Opinion Must Back Recreation Land Planning

THE growing demand for official city plans is an evidence of the awakening of city councils to the need of scientific study and engineering skill in the building up of our growing cities. One prominent planning engineer with his staff was last year engaged in working out official plans for 36 cities.

The adoption of a city plan does not guarantee that recreation needs will be safeguarded. Real estate values backed by selfish interests that are able to organize citizens must be met by intelligent and organized associations of citizens who are equipped with facts and information and are able to fight for the public welfare. . . .

City planning commissions have huge projects to work out. The building and widening of main thoroughfares, sewer systems, public buildings and schools involves such huge sums of money that recreation needs are likely to be relegated to a minor place. Therefore, *back of every city planning commission should be an organized group of citizens who have knowledge of the field of recreation in general,* who are equipped with the facts as to the need of children and adults, and, most important of all, who know how to organize public opinion to bring pressure with the city council when it is most needed. Recreation executives in many cases are not free to fight their battles for the needs of the public and must be reinforced by citizens' committees who are absolutely free to speak and act.

MRS. M. P. PORTER,
Secretary, City Planning Association, Buffalo, N. Y.

A Super-Race Through Leisure

MY mind runs ahead a century or two. *I see a new super-race* trained through play and recreation. The only thing that can hinder realization of this picture is War. Let us muzzle War! And when we do get this superman, I visualize him as a realization of the Athenian ideal; the ideal expressed by Pericles as representing an equal balance in the individual between mental and physical energy. *The cultured mind in a cultured body represents Nature's masterpiece.*

GENE TUNNEY.

We have not thought we could scrap unplanned cities, even where recreation land is prohibitive in price. I do not know whether it is permanently true or not that cities cannot be scrapped.—JOHN NOLEN, *City Planner, Cambridge, Mass.*

Recreation's Responsibility to the Working Man

THE need of competent recreation leadership was never so important as during a time of industrial depression. Opportunities for wholesome play will help to relieve the strain of unemployment, both for the man out of work and for his family.

Recreation promotes community peace and harmony. If the working man has an opportunity to forget the toil and drudgery of the shop or office on the playground, he will not carry his grouches home to the family, causing discontent and quarrels. The people of the United States have over 3,500,000,000 free hours each week. *How these hours are spent is of vital importance to every municipality.*

CLARENCE E. BREWER,
Commissioner of Recreation, Detroit, Mich., in an outline of the major objective of recreation.

* Experts on the staff of the National Recreation Association have been working for some time towards production of a scoring system, or set of measurement standards to place in the hands of recreation executives to use in the accurate gaging of their own efforts year by year; of the status of their work as compared with other cities and with the ideal system.

SAFEGUARD SUBURBS with Motorcycle Police

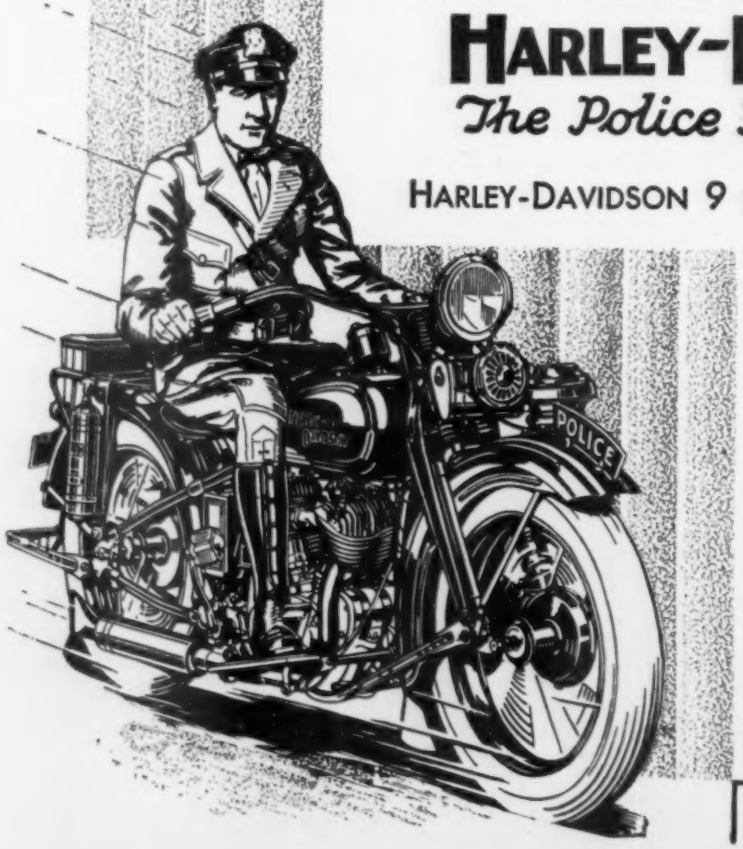
Outlying territories and suburbs are policed more effectively and more economically when a squad of motorcycle police is available for this service.

Because of his mobility, the motorcycle officer can patrol more territory than four men on foot, and he will cover it more thoroughly. Any emergency will find him on the scene almost instantly, and he soon has the situation in hand.

A motorcycle squad for patrolling and special missions enables the main body of the force to be concentrated in downtown sections where they are most needed.

Most motorcycle squads are mounted on Harley-Davidsons—there are more of these famous motorcycles in police service than all other makes combined. There could be no stronger proof of their superior speed, sturdiness, and economy.

HARLEY-DAVIDSON MOTOR CO., *Dept. M, Milwaukee, Wis.*



HARLEY-DAVIDSON
The Police Motorcycle

HARLEY-DAVIDSON 9 point police service

1. Controls traffic
2. Patrols outlying areas
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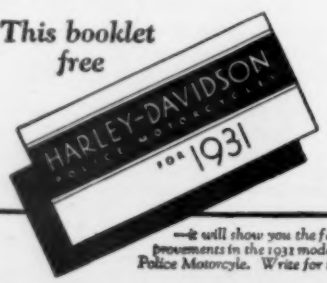
6. Enforces parking ordinances
7. Guards school crossings
8. Releases foot patrolmen
9. Leads parades and escorts

This booklet free



—it will show you the features and improvements in the 1931 models of America's Police Motorcycle. Write for it today.

METHODS and COSTS of REFUSE COLLECTION and DISPOSAL

The Measurement and Control of Municipal Sanitation

THE Committee on Uniform Street Sanitation Records of the International Association of Street Sanitation Officials, 923 East 60th Street, Chicago, Ill., has published a tentative report on the measuring and control of municipal sanitation activities.

Part I, "The Need of Measurement Standards in Municipal Sanitation," covers such subjects as aids to sanitation management, measuring sanitation activities, standard work units for measuring the amount of work performed, computation of work units in terms of cost, the value of comparisons between cities, performance and cost analyses as aids to budgeting, and reporting sanitation activities to the public.

Part II is devoted to the measurement of street cleaning, snow removal, refuse removal, refuse disposal, and catch-basin cleaning, and Part III discusses records and cost accounting procedure, including records and accounting requirements, elements of cost and their control, time and performance reports, and assembling and presenting administrative reports.

The units tentatively approved by the committee are as follows:

1. *Street cleaning.*—"Curb miles" of streets cleaned. This represents the actual miles cleaned on each side of the street parallel to each curb line. Although this unit is computed differently under different methods of cleaning, it is applicable to all types of cleaning, whether by hand, pick-up machine or flusher.

2. *Snow removal.*—Its distinct nature and method of removal call for separate treatment. The following units are recommended as standard: (a) number of miles of street plowed; (b) number of cubic yards of snow removed and hauled away; (c) number of miles of sidewalk plowed.

3. *Refuse removal.*—"Tons" of garbage and other refuse collected and hauled to a point of disposal. That is the short ton of 2,000 pounds. Although measuring quantities of garbage and refuse by weight is the only way of obtaining measures of even approximate accuracy, in many cases it is impractical or impossible to weigh even sample loads. Particularly is this true in the case of ashes and rubbish. "Cubic yards" has therefore been provided as an alternative unit where computations cannot be made in tons. The number of individual collections and lengths of haul in miles are also important units for measuring the amount of work performed.

4. *Refuse disposal.*—"Tons" of garbage and other refuse disposed of at incinerators, reduction plants, hog farms, dumps and by other means. As the same arguments apply, "cubic yards" is employed as an alternative unit for disposal as well as for removal.

5. *Catch-basin cleaning.*—As the amount of refuse removed from catch-basins varies with the frequency of cleaning, two units for measuring this work are suggested: (a) number of cubic yards removed; (b) number of catch-basin cleanings.

Improvements in Refuse Collection in Calcutta

IN the main town area of Calcutta, India, pony carts and some buffalo carts were used to collect refuse from street dustbins. The contents were then unloaded into railway cars placed against raised platforms constructed at four different points along a road which was some time ago the eastern boundary of the city. These cars when fully loaded were hauled by locomotive over a railroad maintained by the City Corporation to a point about three miles east of the town, for final disposal.

By this process about 1,100 tons of refuse were daily removed from the streets of Calcutta to reclaim a vast piece of marshy land known as Square Mile. There is an old-type incinerator and there are other dumping-grounds where a portion of the city refuse is dumped, but not to the extent of constituting a problem.

The road along which the railroad runs is no longer a boundary, but is now a main artery through the heart of the city, with numerous grade crossings. It is felt that the railway should be removed because it is a nuisance and the only solution of the problem seems to be the collection of municipal refuse by trucks which would haul it direct to the Square Mile.

Scavenging work in Calcutta is not done by contract and there is no house-to-house collection. The house refuse is thrown into the street dustbins and in some places is deposited in the streets. The city corporation maintains a large number of street sweepers who also collect all refuse in the streets, removing it to the dustbins. The city has nothing to do with the collection of trade refuse. Experiments were started in 1921 to determine the most economical method of hauling the refuse to the disposal site, including the use of motor-trucks and trucks and trailers. It was found that the truck service insured speedy removal of the refuse and uniformity of service, as well as better control of its working. In the cart system it was the daily practice to remove refuse from the important thoroughfares first and in other places later, with the result that the slum areas were often neglected. In the truck system, however, there are fixed routes for each truck, and bins are placed at suitable intervals according to the quantity of refuse available in the whole area covered by a particular route, which may constitute better-class residential quarters, a slum or a combination of both. All the bins are cleared regularly and any negligence is easily detected. A motor-truck replaces about twenty carts, and it is obviously more easy to control the working of one truck than twenty carts.

The stage of experimentation has passed and a portion of a central refuse platform has already been constructed. Motor-trucks are gradually being introduced throughout the city. The cost involved in the construction of the central refuse platform is justified by the prospect of an equal return from the proceeds of land and structures liberated and the increased taxable valuation of the Circular Road properties.

R. K. GANGULY,
in the *Journal* of The Association of Engineers, Calcutta, India.

Long Branch, N. J., Has an Efficient Incinerator

THE city of Long Branch, N. J., built its incinerator in 1928 at a cost of $69,620. This incinerator, a Pittsburgh-Des Moines of the two-unit type, has a capacity of 100 tons in 24 hours. It has been operated continuously since its acceptance and careful records show costs of $1.35 per ton for the first year and $0.93 per ton for the second year. Operating costs for eleven months of 1928 and the whole of 1929 are given in the following table:

	1928	1929
Superintendent	$1,385.00	$1,565.00
Labor	3,316.80	4,480.11
Repairs	126.74	318.14
Equipment	116.63	166.81
Telephone	50.15	76.82
Water	92.69	208.93
Light	9.84	13.34
Power	209.64	201.82
Coal and wood	2,255.75	1,801.14
Workman insurance	.....	50.34
Total	$7,563.24	$8,882.45
Tonnage	5,571.5	9,536
Cost per ton	$1.35	$0.94

Garbage and rubbish are collected separately in most sections of the city and loads are weighed during a definite period each month. Weights of other loads are estimated. More than 700 dead animals have been destroyed in this incinerator in two years and at times garbage from the neighboring boroughs of Red Bank, Rumson and Seabright has been cared for.

A. W. SWEET,
State District Health Officer, Monmouth County, N. J.

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if it is made in Steel—Truscon can make it

The very extensive use of Truscon Steel Products for public building, roads and construction of all kinds is evidence of the high regard which public officials have for Truscon quality. This regard is based on the intrinsic merit of Truscon Products and the superiority of their design.

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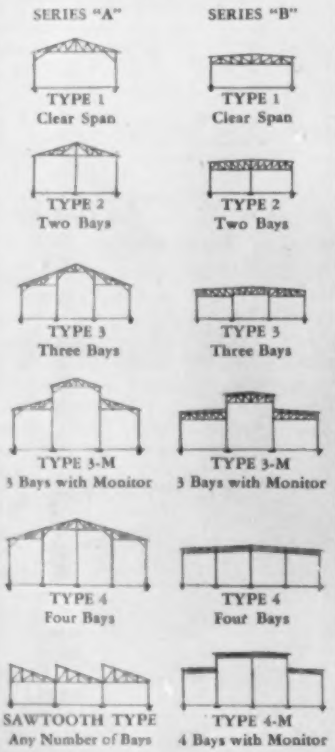
Flat Roofs or Pitched Roofs in all Types and Sizes



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Truscon Highway Products include Welded Steel Fabric and Rib Bars for reinforcement, Dowel Contraction Joints, Air-Cushion Expansion Joints, Steel Road Forms, Curb Bars and All-Steel Highway Guards.

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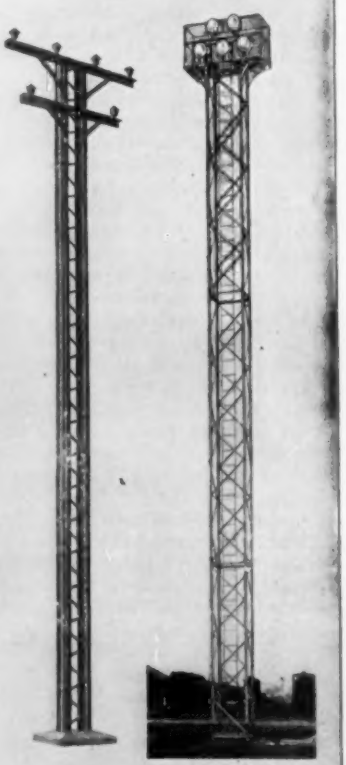
For Overhead Construction and Flood Lights



Other Truscon Products

STEEL WINDOWS
Superior in design and workmanship. A complete line with a type for every building.

STEEL DOORS
Available in stock types and in special designs for hangars, fire houses, and industrial buildings.

STEELDECK ROOFS
Insulated to any degree and water-proofed. Light in weight—fireproof—quickly erected—economical.

FIREPROOF CONSTRUCTION
Steel Joists for floor and roof construction. Everything in Reinforcing Steel for concrete.

TRUSCON STEEL COMPANY YOUNGSTOWN, OHIO

Warehouses and Offices in Principal Cities

Truscon Steel Company of Canada, Limited, Walkerville, Ontario

"Keep Your Streets Clean"

Items on Street-Cleaning Problems and Methods

Association Changes Name

AT the recent meeting of the International Association of Street Sanitation Officials, held in Louisville, Ky., on October 9-11, it was voted to change the name of the Association to International Association of Public Works Officials.

$31,259 for Street Cleaning in Manchester

STREETS in the business sections of Manchester, N. H., are cleaned six times per week. A motor sweeper cleans the entire width of the street, starting work at midnight and working until 7 in the morning and covering about 25 miles each night. White wings are employed during the day to clean the gutters and pick up waste paper from the streets. Twice each week the streets in the residential sections are cleaned by the sweeper, the gutters being cleaned in the spring and fall. The equipment of the white wings consists of a push cart and broom, each man cleaning about 2 miles per 8-hour day, and the distance varying according to the amount of débris to be collected. Street cleaning is under the supervision of a Superintendent, who lays out the work and is responsible for the condition of the streets.

The total cost of street cleaning in Manchester for 1929 was $31,259, of which $21,032 was for salaries and wages.

DANIEL F. CRONIN,
Surveyor.

Streets Cleaned Daily in Albany, N. Y.

DURING a 38-week street-cleaning season, Albany cleans approximately 175 miles of streets daily. White wings are used to clean about 75 miles of streets; 20 miles are cleaned by machine brooms, using two horse-drawn and one motor-drawn broom; three flushers are used on approximately 75 miles and ten motor pick-up sweepers cover 150 miles daily.

Each motor pick-up machine is assigned to a territory in the residential section to be cleaned each day, the operator of the machine being held responsible for the condition of that section.

Streets in the business section are cleaned by white wings with carts and cans, the cans being left at designated places when filled and later picked up by trucks. The equipment of the white wings, who work singly rather than in gangs, consists of cart, can, broom, shovel, suit, boots and hat. Each man cleans approximately 8 blocks during an 8-hour period, the amount varying according to traffic conditions.

Motor sweepers generally cover about 24 miles in a standard day's work, while flushers and horse-sweeper gangs cover approximately 8 miles. Most of the cleaning is done between 8 in the morning and 5 at night, and in the congested districts an additional shift works from 4 in the morning until noon.

During 1929 a total of 14,019 cubic yards of street sweepings were removed, 3,600 yards by white wings, 5,619 yards by pick-up sweepers, and 4,800 yards by sweeping and flushing. The total cost of this work was $192,822, of which $154,330.15 was for salaries and wages. A modern, well-equipped garage is maintained to care for the equipment.

Street cleaning is greatly hampered by parked automobiles, although this has been overcome to some extent by limiting parking in the business section to special hours and prohibiting parking at night in the residential section.

JOHN J. MORRISSEY,
Superintendent of Streets.

One Sweeper and Four White Wings Handle Street Cleaning in Colorado Springs

THE streets in the business district of Colorado Springs, Colo., are cleaned every night, weather permitting, by a motor sweeper. This machine also cleans the pavements in the residential section twice each week. A Ford truck picks up the sweepings, which have been placed in piles along the curbing on side streets. Four white wings with carts are also used in the business district, followed by the Ford truck. These white wings work singly, their equipment consisting of a push cart, broom and shovel in summer and an additional snow shovel and scraper in winter. The business district is divided into sections and each man is required to clean about five 420-foot blocks per 8-hour day. During spring and fall the white wings are also required to remove leaves from the gutters in the residential section.

During 1929 approximately 2,838 cubic yards of street sweepings were removed at a total cost of $11,000, or approximately $.02 per square yard of streets cleaned. Of this amount, $7,787 was for salaries and wages.

In an effort to reduce street litter in the city, waste paper and trash cans have been installed on the streets.

C. H. BRYSON,
Assistant City Engineer and Superintendent of Streets.

Fifty Per Cent of Cleaning Done at Night

THE city of Long Beach, Calif., uses two mechanical sweepers for the cleaning of its streets. Both sweepers work every night, and one sweeper works an additional shift during the day, five days a week. Sweeping during the day is done only in the residential districts. Fifty per cent of all street cleaning is done at night and approximately 50 per cent of the hand sweeping is done at night, starting between the hours of 11 P. M. and 1 A. M.

It has been found that the best hours for cleaning the streets are from 11 at night to 7 in the morning. Parked cars are "circled," that is, the streets are cleaned around them and the cars are not moved. It is felt that to efficiently clean the 165 miles of paved streets in the city two additional sweepers are needed.

A. H. ADAMS,
Director of Public Service.

Washington Streets Flushed Nightly

THE business section of the city of Washington, D. C., has a total area of 1,250,000 square yards. These streets are flushed by a battery of six machines every night except Sunday. In addition, an area of approximately 625,000 square yards adjacent to the business section is flushed three times a week by a battery of three machines, working from 10:30 P. M. until 7 A. M. Seven flushers are used for day work in the residential sections.

The white wings start work at 7 in the morning, going out first with burlap bags and picking up all paper on their routes. When this is done, they go out with their regular broom and can-carrier equipment for the rest of the day.

There is no special procedure with regard to parked cars, the situation being handled in the most expedient way.

MORRIS HACKER,
Supervisor, City Refuse.

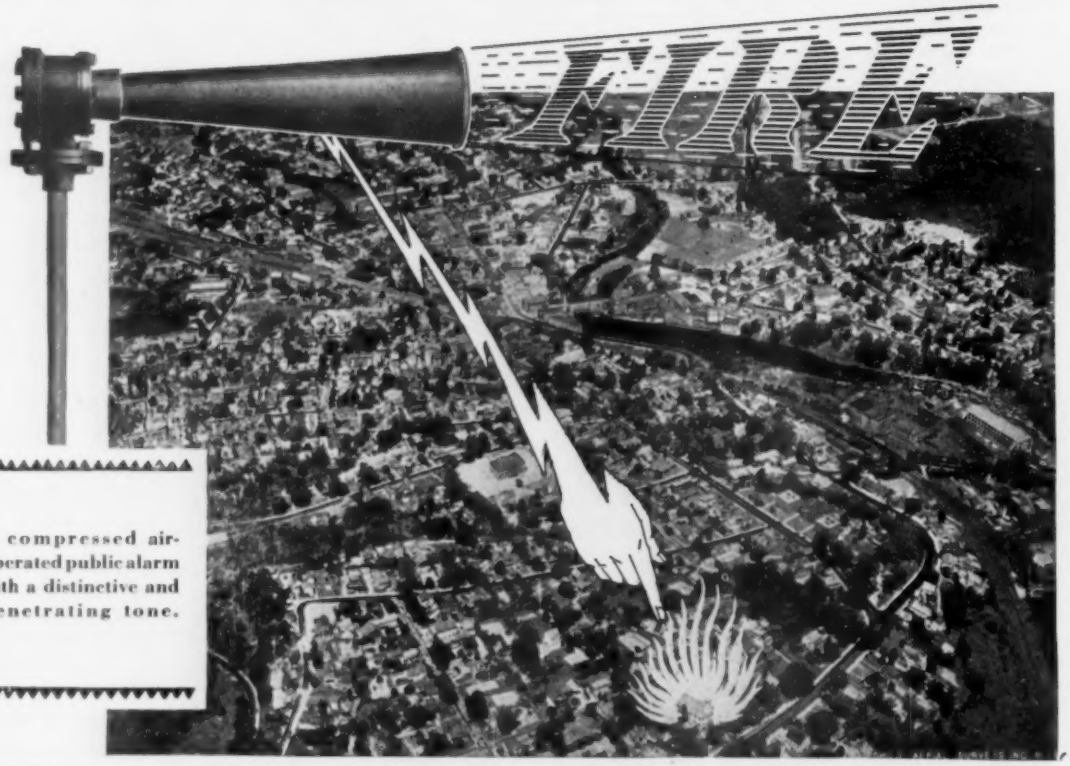
Large Part of Cleaning Done at Night in Denver

ABOUT 65 per cent of the actual street cleaning in Denver, Colo., is done at night, the remaining 35 per cent being done during the day. The distribution of machines and labor between night and day cleaning is about in the same proportions, with the exception of some dry sweeping which is done in the wholesale district at night. The remainder of the street cleaning, both day and night, is done by flushing. The same machines are used at night as in the daytime, using the hours between the shifts for greasing and servicing the machines.

It has been found that the best hours for street cleaning are between 10 at night and 7 in the morning. If it seems desirable, parked cars are removed by hand, otherwise the streets are cleaned around them.

F. J. ALTVATER,
Highway Commissioner.

THE DIAPHONE



A compressed air-operated public alarm with a distinctive and penetrating tone.

A PUBLIC fire alarm to be of any value, must first of all have a distinctive tone that cannot be confused with any form of whistle, bell, etc.; secondly, it must have carrying power that will reach out to the important parts of the municipality.

The *Diaphone* is just such a public alarm. Its tone is distinctive—it literally shrieks "F-I-R-E." It cannot be confused with locomotive or factory whistles, bells, or sirens that might be used for other purposes in the average community. *The Diaphone* has carrying power greater than any other modern device used for this purpose.

The *Diaphone* goes one step further than a siren. It provides a safeguard against failure in the electric current supply. An air storage reservoir makes it possible for a fire alarm to be sounded on the *Diaphone*, even though the electric current should be shut off for a period of 24 hours.

The *Diaphone* which has an enviable service record, is now available in a smaller size as well as in the standard type "B" unit.

Will Operate from

A Standard Street Fire Alarm Box

An Excelsior Transmitter located in fire station or telephone exchange

Write for a complete description and prices

THE GAMEWELL COMPANY

NEWTON, MASS.

"A Box A Block"

Traffic—Fire—Safety Items of Interest to Departments of Public Safety

Lessening Pedestrian Accidents

"ANY community can cut its death-rate by organizing and carrying on a continuous program of traffic safety education and maintaining public interest in such a program," stated Ralph W. Robinson, Executive Secretary of the San Francisco Traffic Survey Committee, in a paper read before the Street and Highway Traffic Section of the recent National Safety Congress in Pittsburgh.

The principal items in a program of pedestrian safety, as outlined by Mr. Robinson, include: (1) a sound framework of legal regulations; (2) widespread, intensive and continuous public education based upon such laws; (3) a highly coordinated system of traffic control mechanisms based upon a competent survey of local traffic requirements; (4) full pedestrian control in congested central business districts; (5) fair and firm law enforcement, and facilitation of traffic movement by the police; (6) the use of safety zones, safety islands or other means of physically separating pedestrians from vehicles on the surface of roadways; and (7) final resort to methods of complete separation of pedestrians and vehicles by carrying the two classes of traffic on separate planes, as by tunnels or bridges.

"Aside from the last-named method, this program of pedestrian safety can be carried out with comparatively little cost," the speaker pointed out. The principal requirement is good organization of public, civic and private agencies, intelligent leadership and persistent unselfish work for the benefit of the whole community. With these factors at work, a community may confidently expect a very substantial reduction of deaths and injuries within a reasonably short time."

Fire Prevention Activities in Three Cities

WHILE San Francisco has just provided by ordinance for the establishment of a Bureau of Fire Prevention, the recently organized Bureau in Brockton, Mass., has already accomplished results. A large number of hazardous old buildings have been condemned and officially posted, reports the National Fire Protection Association, which cooperates with local agencies. Through the efforts of the Brockton Fire Prevention Bureau and the City Building Inspector's department, a number of the condemned buildings have already been demolished or safeguarded. The Bureau has also been active in securing the removal of hazards in the congested districts.

San Francisco, besides providing for a Bureau of Fire Prevention, has also adopted an ordinance governing the handling and storing of nitrocellulose film. The fire prevention committee of the San Francisco Junior Chamber of Commerce has been active in advocating these ordinances.

Providence, R. I., has inaugurated a plan for inspection of every dwelling-house in the city. Cooperating with the Providence Safety Council, members of the Fire Department are to call at every home, ask permission to inspect the basement for hazards and deliver fire prevention literature.

"Autocide"? "Motorcide"?

IS "autocide" the best possible word that can be coined to mean "motor-vehicle fatality"?

The National Safety Council has suggested it as an easy way of mentioning one of our most frequent happenings—and no one who reads it can fail to get the intended meaning. Various comments are published in the October issue of *Public Safety*, the organ of the Council. It is evident that the need of some such word is realized, but the accuracy of "autocide" is, we believe, rightly questioned.

Of course, the thought started with "suicide," which means:

> The act of killing oneself
> One who kills oneself

The "oneself" is in the first syllables is the object—the person killed. But because this is a reflexive word and we know that "one" did the killing, we cannot easily get away from the thought that "sui," the first syllables, express the subject; and so "autocide" has been evolved with the intended meaning of a killing done by an auto. Thus have been ignored "matricide," a killer of one's mother; and "germicide," a killer of germs; words in which the first syllables express the person or thing killed—exactly as in "suicide"—not the person or thing that did the killing. Logically, "autocide" would mean a killer or a killing of an auto, while we are looking for a short way of saying a killing by an auto, and also one who kills with an auto.

But nevertheless, and despite, and after all—for the sake of the cause, THE AMERICAN CITY is willing to forget comparative etymology and all this highbrow remembering that the first syllables should express the object, and hereby votes for "motorcide," the suggestion of Edward T. Hartman, Consultant to Planing Boards, Division of Housing and Town Planning of the Massachusetts Department of Public Welfare. This word gets away from any confusion due to the "self" meaning of "auto," and is complete and comprehensive.

Automobile Deaths Increase by More Than 3,000 in Year

IN the death registration area in continental United States, 29,531 deaths were caused by automobile accidents in 1929, the Department of Commerce announced last month. This figure represents a death-rate of 25.4 per 100,000 population. In 1929 the death registration area consisted of all the states but South Dakota and Texas, plus nine registration cities in non-registration states, and included 95.7 per cent of the total population of continental United States. Assuming that the same death-rate would hold true for the remaining 4.3 per cent, the number of deaths in 1929 from accidents in which automobiles were involved is estimated as 30,858 for the whole country, over 3,000 more than the estimate of 27,618 for the year 1928.

At the beginning of the present year, before the official figures for 1929 were available, the National Safety Council estimated that the total would reach 31,500 deaths. Comparison with the Department of Commerce estimate for the entire country, 30,858, reveals the fact that the Safety Council's estimate was only 642 out of the way.

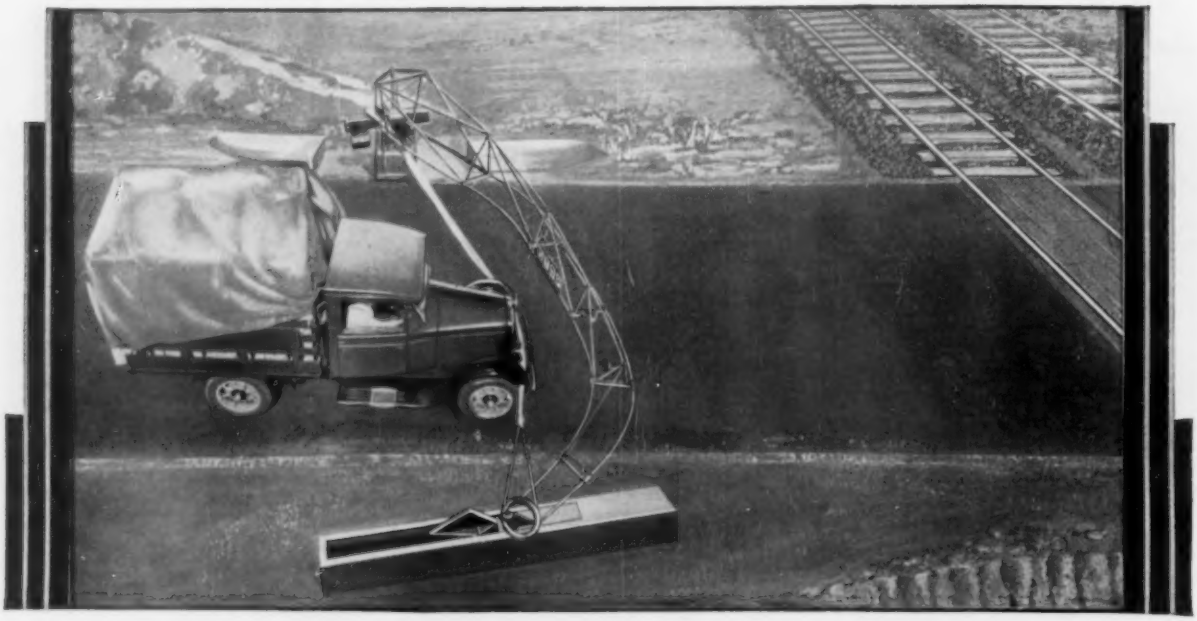
A Retirement System for Infirm Buildings?

THE collapse of a rooming house in the Greenwich Village section of New York City which cost the lives of five persons, raises two interesting questions. The tragedy was due, immediately at least, to the demolition of a group of adjoining buildings, but the wrecked structure itself was none too stable. Various investigations already under way will seek to fix personal responsibility and will doubtless propose suitable amendments to the code of ordinances.

The latter is the important thing. Will anything come of it? Late in the spring the city was shocked by a cruel fire in a motion picture studio. A prolonged and thorough investigation followed. Numerous recommendations were made to the Board of Aldermen toward the close of its session. With the new session, these were forgotten and stowed away in the attic.

The other question is whether soon we may not have to work out a retirement or pension system for new buildings which will require their removal when they have lived the life for which they were built.

THE HIGHWAY GUARDIAN...

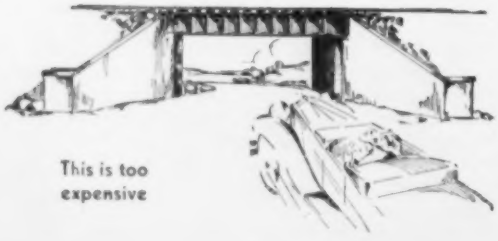


throws a new light on Grade Crossing Protection....

FOR years it has been thought that grade separation was the only complete method of preventing crossing accidents. But high costs have defeated the effectiveness of this means of keeping trains and motorists apart.

Not until the development of THE HIGHWAY GUARDIAN was there a method of protection that could be put into immediate service for an expenditure low enough to permit its use throughout the country.

Unlike the grade separation, the installation of THE HIGHWAY GUARDIAN leaves grades and adjacent property unchanged. It fits in with existing conditions and forcibly stops cars, trucks or buses whose drivers attempt to pass at times of danger. Installation is simple, quick and costs are but a fraction of the expenditure required for grade separation.



This is too expensive

To secure thorough protection *NOW* for the millions of cars traveling the highways, install THE HIGHWAY GUARDIAN. It meets today's requirements at the lowest cost per crossing.

FRANKLIN RAILWAY SUPPLY COMPANY, Inc.

NEW YORK CHICAGO SAN FRANCISCO ST. LOUIS MONTREAL

ROCK FLEMING
Police Chief
Kalamazoo, Mich.
(Appointed 1928)

JAMES L. MOORS
Police Chief
Kent, Ohio
(Appointed 1928)

A. L. McCLURE
Fire Chief
West Point, Miss.
(Appointed 1916)

J. G. LAUBENHEIMER
Police Chief
Milwaukee, Wis.
(Appointed 1921)

HENRY REX
Police Chief
Struthers, Ohio
(Appointed 1922)

Who's Who in Public Safety

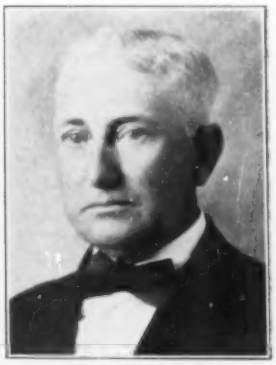
The 35th of a Series of Portraits of Fire and Police Chiefs Which Has Appeared Monthly Since January, 1928

JAMES J. MULCAHEY
Fire Chief
Yonkers, N. Y.
(Appointed 1896)

J. B. WEBBER
Police Chief
La Crosse, Wis.
(Appointed 1906)

ROLAND S. PAYNE
Police Chief
Wisconsin Rapids, Wis.
(Appointed 1917)

C. A. WEINGATES
Police Chief
Sandusky, Ohio
(Appointed 1897)



H. W. SOWARDS
Police Chief
Gallipolis, Ohio
(Appointed 1923)

HARRY J. KING
Fire Chief
Negaunee, Mich.
(Appointed 1927)

GEORGE P. McGILLAN
Fire Chief
Appleton, Wis
(Appointed 1901)

J. J. GIBSON
Police Chief
Cambridge, Ohio
(Appointed 1922)

S. A. MERCIER
Fire Chief
Rumford, Maine
(Appointed 1927)

PRECISION

Great achievements were never accomplished by hit-or-miss methods. Every detail was planned with utmost precision . . . every plan precisely executed.

The outstanding performance of Fulton Diesels is a natural dividend on the investment in a competent staff of precision engineers, many of whom have been in the Diesel industry since the beginning of the century . . . Such records as — never a cracked piston head . . . never a main bearing shim removed . . . never a failure of crank pin bolt — belong to the engineers who have established the record and who will utilize all resources to keep it intact — Fulton engineers.

No matter what your power needs are, there is a Fulton-Diesel that will do the job economically. We will be glad to analyse your power requirements and make recommendations. No obligation, of course . . . Fulton Iron Works Co., St. Louis, Mo., U. S. A.

SUCCESSFUL ENGINE BUILDERS FOR OVER SEVENTY-FIVE YEARS

658

FULTON DIESELS

100 TO 2000 HORSE POWER

HELPFUL HINTS TO CITY OFFICIALS

THE AMERICAN CITY should always be mentioned when writing for this material which is furnished free. Keep your files up to date by checking over these items each month and writing for those you need.

TAR KETTLES WITH DUAL PNEUMATICS

Bulletin E-14 of Littleford Bros., 500 E. Pearl St., Cincinnati, Ohio, tells all about the Littleford No. 97 supply tank, which is now furnished mounted on a new trailer with dual pneumatic rubber tires with a reversible steer feature.

PORTABLE CENTRIFUGAL PUMPS

Combining light weight and easy portability with staunch, sturdy construction, the LaBour Co., Inc., Elkhart, Ind., has developed the LaBour Type WPD 4-inch direct-mounted self-priming centrifugal pump, which is described and illustrated in a folder that will be sent to those interested on request.

A NEW ROAD TORCH

A folder describing the T & B torch for use on road and other outside construction work, which is practically unbreakable, will stay lighted in spite of weather conditions, and cannot be accidentally tipped over and extinguished, may be secured on request from the Consolidated Iron-Steel Mfg. Co., 1290 East 53rd St., Cleveland, Ohio.

AIRPLANE GUIDES

The Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has recently developed an effective and distinctive light composed of six U-shaped Neon tubes connected in series and giving a large area light source of a very distinctive red color for marking obstacles and for guiding airplanes, on which it will be pleased to send complete information on request.

A NEW PORTABLE HOIST

Details, specifications and measurements of the new Trackson Model HC portable hoist, which is adapted to mounting on the Case Model CI industrial and Model C agricultural tractors, are given in Circular No. 246, which may be obtained by writing the Trackson Co., 1322 South First St., Milwaukee, Wis.

TIGHT PIPE JOINTS

Leadite, which has been successfully used on bell-and-spigot pipe joints of all sizes from 4- to 48-inch diameters and for various pressures, saving expense of calking and making a reduction in the cost of digging bell holes, is made by the Leadite Co., Land Title Bldg., Philadelphia, Pa., which will gladly send complete data on request.

SHARPENING MOWERS AND SKATES

The Peerless mower sharpener, a simple machine which sharpens all makes of power and hand lawn-mowers, grinding a perfect bevel and clearance, and which has a skate-sharpener attachment for use in winter, is described in a catalog which will be sent on request by the Fate-Root-Heath Co., 908 Bell St., Plymouth, Ohio.

WATER AND GAS PIPE

Cast iron pipe for water and gas, as well as special castings and flange work, are made by the Donaldson Iron Co., Emaus, Lehigh Co., Pa., from which complete data and prices may be secured on request.

VALVES AND HYDRANTS

The Eddy Valve Co., Waterford, N. Y., will gladly send information regarding Eddy hydrants and the Eddy valve, which has a number of distinctive features, including the fact that the gates are free to revolve on the trunnion, so as not always to seat in the same position.

TRAILER TOOL-BOXES

Catalog No. 12 describing Hotstuf heaters made in 25-, 50-, 75- and 100-gallon capacities, and Mohawk Hi-Speed trailer tool-boxes made in 6-, 7- and 8-foot lengths, is available to municipal officials on application to the Mohawk Asphalt Heater Co., 52 Weaver St., Schenectady, N. Y.

PLAYGROUND AND WATER APPARATUS

Safe and permanent equipment for playgrounds and swimming places is described in the 1930 Catalog No. 22 of the Everwear Mfg. Co., Desk 12, Springfield, Ohio, which will be sent on request.

BRASS AND COPPER

The Chase Brass & Copper Co., Inc., Waterbury, Conn., will be pleased to send on request complete information regarding Chase brass and copper pipe and fittings.

DEPENDABLE FIRE HOSE

Complete information regarding Red Cross and other brands of Eureka fire hose, as well as a copy of the Daily Fire Report Record Book, is available to municipal fire officials on request, from the Eureka Fire Hose Mfg. Co., 50 Church St., New York.

FENCES FOR CITIES

Municipal officials interested in fencing school grounds, playgrounds, athletic fields, tennis courts and other places should secure from the Cyclone Fence Co., Waukegan, Ill., complete data regarding Cyclone weather-resisting copper steel fence.

PIPE CUTTERS

A circular describing the Ellis pipe cutter, which has six keen rotary blades that will eat their way through any pipe in double-quick time, may be secured on application from the Ellis & Ford Mfg. Co., 38 Piquette Ave., Detroit, Mich.

GATE VALVES

The Darling Valve & Mfg. Co., Williamsport, Pa., will gladly send to water-works and other municipal officials data regarding Darling gate-valves, which are dependable in service.

KEEPING BEARINGS COOL

Circular No. 107-R of the Joseph Dixon Crucible Co., Jersey City, N. J., tells how Dixon's graphite cup grease, a finely pulverized flake graphite combined with fine quality greases, takes the load and wear and prevents overheating and scoring of bearings.

SNOW-PLOWS

Complete data regarding Frink Sno-Plows, which are in use by cities, counties and states all over the country, may be secured on request from Carl H. Frink, Clayton, Thousand Islands, New York.

WATER-WORKS VALVES

The Golden-Anderson Valve Specialty Co., 1329 Fulton Bldg., Pittsburgh, Pa., will be pleased to send information and catalogs on its complete line of valves and water-works service.

WATER-WASTE SURVEYS

Complete information regarding Pitometer water-waste surveys and what they can do for cities, will be sent on request by the Pitometer Co., Water Distribution Engineers, 50 Church St., New York.

AERATING AND MIXING SEWAGE

A new method of combining the aeration and mixing of sewage at a nominal cost to facilitate sewage disposal is described in the illustrated catalog of Vogt Brothers Mfg. Co., Inc., Louisville, Ky.

INTERNAL-COMBUSTION ENGINES

Sterling high-duty internal-combustion engines in sizes from 12 to 565 b.hp. and gas- or gasoline-driven, are made by the Sterling Engine Co., Dept. C-11, Buffalo, N. Y., which will be pleased to send complete specifications on request.

UNFAILING FIRE-HYDRANTS

A descriptive catalog describing Waterous hydrants, which are simply constructed, have all-steel drains and a protected valve that closes with pressure, is available to municipal officials on request to the Waterous Co., St. Paul, Minn.

ASPHALT FOR PAVEMENTS

The Texas Co., Asphalt Sales Dept., 135 E. 42nd St., New York, will be pleased to send to municipal street and highway officials complete data regarding Texaco asphalt for city streets and pavements.

A NEW SMALL VERTICAL BOOM DITCHER

A vertical boom ditcher that is only 4 feet wide and 11 feet, 6 inches long, and is no higher than the head of a tall man when he is digging, and that will dig a trench from 5 inches to 8 inches wide and from zero to 3 feet deep, has been announced by the Barber-Greene Co., 515 W. Park Ave., Aurora, Ill., which will send complete information on request.

ECONOMICAL HIGHWAYS

Complete information as to how the use of Tarvia Re-Tread for streets and highways will permit cities and counties to lay more road for the same money, may be secured without obligation from the Barrett Co., 40 Rector St., New York.

ASPHALT AND TAR HEATING

The American Steel Works, 1211 W. 27th St., Kansas City, Mo., manufacturers of everything required for the heating and application of pitch, tar and asphalt, will be glad to receive requests for literature and prices on their line.

DIAPHRAGM PUMPS

The Rex Pump Book, which tells the story of the Rex Water Boy, a new 3-inch diaphragm pump that has many advantages, being completely enclosed and self-oiling and has high-tension magneto, may be secured on request from the Chain Belt Co., 767 Park St., Milwaukee, Wis.

RUBBER-LINED FIRE HOSE

Fire chiefs and others interested in dependable, long-lived fire hose, should secure complete information from the Fabric Fire Hose Co., 9-15 Park Pl., New York, regarding its wax and para gum treated fabric, rubber-lined fire hose.

CLEAN WATER-MAINS

Details regarding The National Method of water-main cleaning will be sent to municipal officials without obligation by the National Water Main Cleaning Co., Burt B. Hodgman, Chief Engr., Hudson Terminal Bldg., New York.

TIME—THAT TOUGH OLD TESTER—FINDS A FOE THAT FIGHTS HIM OFF

Many generations ago, Time—That Tough Old Tester—began his fight with genuine puddled wrought iron. Against that sturdy metal of which Reading 5-point pipe is made, Time first used his most potent weapon, corrosion.

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Make your first cost of pipe the last cost, avoiding damaging leaks, by insisting on Reading genuine puddled wrought iron pipe.

READING IRON COMPANY, Reading, Pennsylvania

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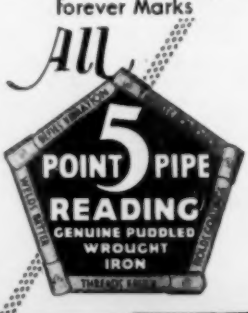

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READING PIPE
DIAMETERS RANGING FROM ⅛ TO 24 INCHES

Science and Invention Have Never Found a Satisfactory Substitute for Genuine Puddled Wrought Iron

NOVEMBER, 1930
Vol. XLIII, No. 5

The American City

470 Fourth Avenue
New York
50 Cents, $4 a Year

A Modern City Fire Department Needs a Technical Division

By KENNETH F. AKERS
Fire Protection Engineer,
Fay, Spofford and Thorndike,
Consulting Engineers, Boston, Mass.

THE finest collections of fire-fighting equipment in the world can be found in the larger cities of this country. With a motorized department consisting of large pumpers, aerial ladders, hose and chemical wagons, water-towers, fire-boats, deluge sets, cellar pipes, gas masks, portable night lighting plants, etc., and manned in many cases by a two-platoon system, there is little left to be desired by our American cities in the way of fire-fighting facilities. In spite of their wealth of equipment and manpower, however, the fire losses of the average American city are still very high. It would seem logical, therefore, to believe that excellent public fire-fighting facilities alone are not the answer to the problem of lowering fire losses. It must lie rather in the realization that fire prevention work and private fire protection are of great importance also.

Present Fire Prevention Work in Fire Departments

This realization that there must be a proper balance between actual fire fighting and fire prevention has led to the formation of fire prevention bureaus within the fire departments of many of our larger cities. Where such bureaus have been active, their influence has already been manifested. There is still much to be desired, however, in the manner in which such bureaus are organized and in the efficiency of their operation.

Briefly, the facts are these. The direction of any city's fire prevention campaign is a technical problem. It demands scientific analysis and treatment. This, an executive trained in engineering can supply. The fire department officers and privates have proceeded with this work to the best of their ability, and full credit is due those officers and men who have pioneered in this field. Fire department officers, however, are not ordinarily trained in engineering. Entrance requirements to the average city fire department are not particularly stringent, and the service does not attract the technically trained man. There have been exceptions to this general rule, and wherever these men, with an engineering background, have gone into a fire department, they have made their influence felt.

A Technical Division

The problem, therefore, is to develop technical talent in the fire department. For want of a better method, let us suggest that a Technical Division be introduced into the modern fire department.

The directing head of this Division should be a man with an engineering education and technical training, and experience in fire protection engineering. He should have under him junior engineers, the number depending on the size of the city. The Technical Division should be under the head of the fire department, to whom it would act in an advisory capacity.

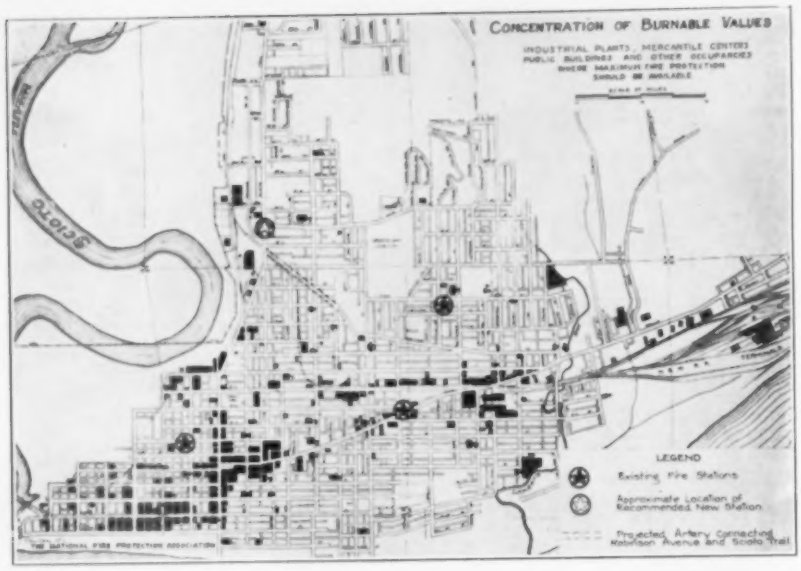
Such an idea, in its bare statement, may seem a trifle radical. The following description of the work and proposed duties for this so-called Technical Division, however, may illustrate the far-reaching benefits which can be expected, once such a Division is well organized and in effective operation.

General Functions of the Technical Division

Any modern business cannot be satisfactorily operated without a definite knowledge of the facts governing that business. The business of fire prevention and fire fighting is no different in this respect from any other business, even though it chances to be publicly administered. The basis for all the Technical Division's work must be fact finding, and hence such a study is their first duty—to diagnose the basic reasons for the city's fire losses and, having

Attack the Fire-Waste Problem

Enlightened attention can do much toward lowering America's excessive fire loss. It remains for each community to solve its own fire-waste problem, for after all, every fire is in itself local. A scientific attack is suggested in this article, the cost of which to the community would be negligible compared to the benefits accruing from it.



From this table it can be seen that 50 to 60 per cent of all fires were due to carelessness or were of unknown origin. Such a fire record of causes can serve no useful purpose as means for enlightening any one on a method of attack for elimination of these fires, numbering 900 to 1,000 every year!

It is granted that it is difficult to determine the cause of many fires. Intelligent and exhaustive study is required to assign a cause for all fires; nevertheless, to prevent them

A STORY IN MAP FORM

The concentration of burnable values in Portsmouth, Ohio, as illustrated at the left, compared with the spot map of fires of that city, below, forecasts serious fire losses unless existing conditions are recognized and corrected

intelligently done so, to direct the activities of the fire department fire prevention forces to the end that such losses can be reduced and be "kept reduced."

The Division's work would consist of the following general duties, each of which is described in detail later:

1. Investigating all fires, determining their cause, the reasons for their spread, and all other facts which would have any bearing on a well-organized fire prevention campaign.

2. Directing all fire prevention inspections.

3. Preparing courses for the officers' school, and instructing the uniformed inspectors. (Courses covering fire-fighting problems should be given by the experienced chief officers, while the other courses, such as instruction regarding special industrial or mercantile fire hazards, would be planned by the engineer in charge of the Division.)

4. Technical inspections of the major industrial fire hazards.

5. Supervising all fire prevention matters demanding coordination of state, city and other authorities.

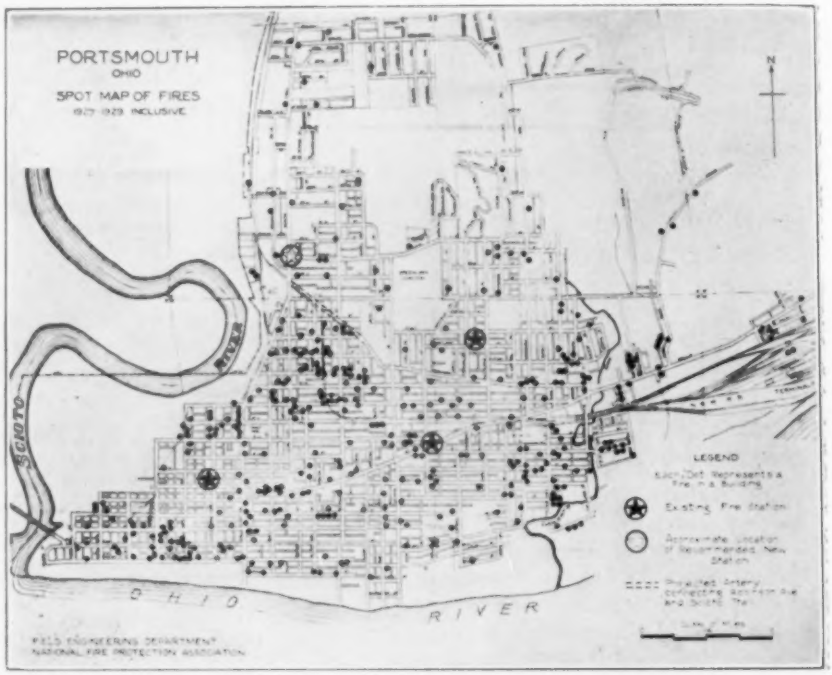
6. Holding periodical conferences with all organizations doing fire prevention inspection work in the city, that a cooperative spirit might be established among all such agencies.

Determining the essential facts regarding all fires would probably be the most valuable work.

For example, one very important city classified the causes of its fires for *twenty years* under *eight* headings. These causes were as follows, figures being given for two typical years for purpose of illustration:

YEARLY FIRE RECORD
(Actual Large City)

Cause	Number of Fires 19—	19—
1. Spontaneous combustion	102	148
2. Children and matches	344	333
3. Cigars and cigarettes	69	94
4. Overheated pipes	62	132
5. Carelessness	681	592
6. Incendiary	15	19
7. Miscellaneous	83	175
8. Unknown	344	327
	1,709	1,820



it is obviously essential that the cause be known.

Contrasted to the foregoing classification of fire causes, another large city assigns causes for its fires under *forty-four headings*. This means that much study must be given to the problem, but such a record of causes gives definite knowledge upon which to base fire prevention work.

The Technical Division, through its corps of engineers, should respond to all alarms for the purpose of studying the aspects of all fires. These men would be hampered with fire-fighting duties during the progress of a fire, but could concentrate their efforts on observing the course of the fire, methods of fighting it, the cause and any other pertinent facts. Periodically the head of the Technical Division should report to the head of the department, recommending ways and means to better control or prevent fires. Spot maps of fires should be kept up to date by spotting fires daily as they occur, thus indicating at a glance those parts of the city that are the danger zones.

The same maps can also serve as a very important guide in directing the inspection work of the uniformed force. The accompanying reproductions of actual maps, one prepared in a large city and the others in small communities, indicate the manner in which fires are spotted and inspection areas plotted for intensive inspection, as well as furnishing a bird's-eye view of the general fire conditions in the community.

Typical examples of what has actually been accomplished in a few cities, through intelligent study of the causes for fires, will illustrate the importance of such work as the basis for efficient operation of a Technical Division.

One large city, on analyzing its fire record, found that *two-thirds* of the total fire loss occurred in dwellings. A home inspection campaign was organized among the children of the public, private and parochial schools. Each child was given a card showing the major cause for the fires which were occurring in dwellings, and was requested to inspect its own home, in company with one of its parents. The parent's signature was requested on the return of the card, stating that the inspection had actually been made. Ten semi-annual inspections by these school children resulted in a 41 per cent reduction in the number of home fires, and a saving of over $1,000,000 worth of property.

Another prominent city found that 40 per cent of all fires in buildings were shingle-roof fires, and a campaign against this hazard was inaugurated.

One New England city, upon carefully studying its fire record, found that out of a total of 568 fires in one year, the following causes accounted for the number of fires shown:

Defective ash chutes	28
Hot ashes	80
Rubbish	108
	216

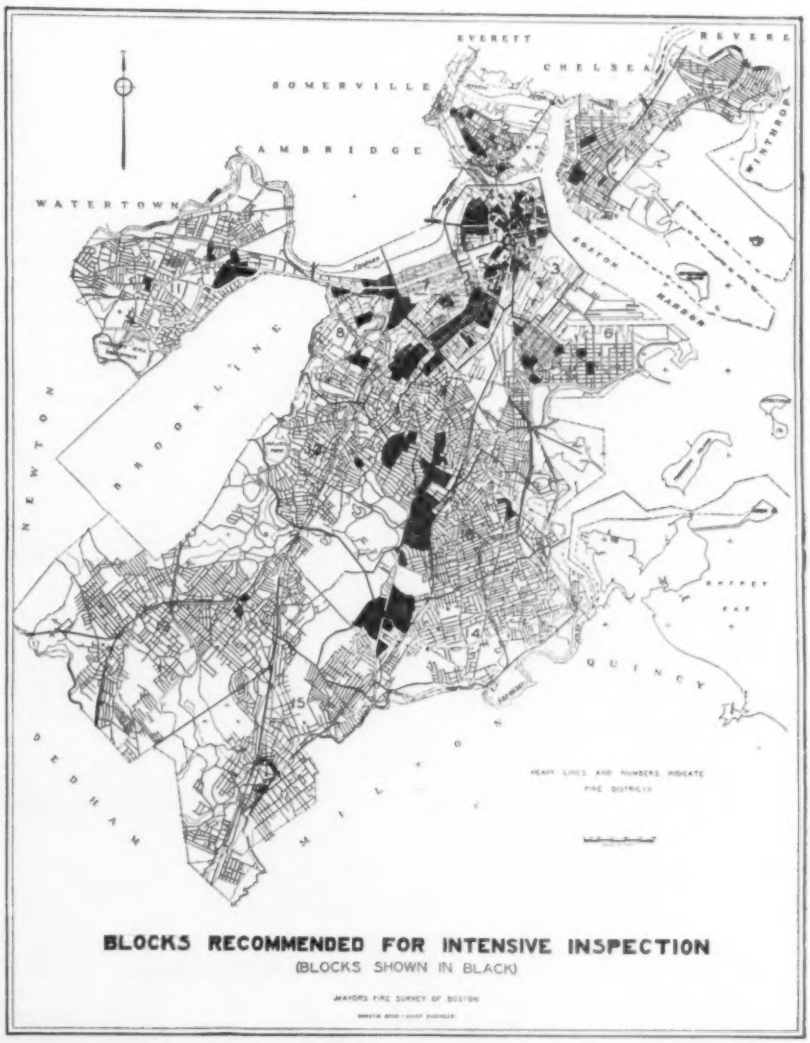
The startling fact was noted that these fires were about 40 per cent of all the fires in the city, and were occurring from a fire hazard comparatively simple to control. Efforts have been made to immediately improve these conditions.

These are only a few examples of the many paths of investigation which may be opened up, once an intelligent analysis of a city's fire record has been made by trained men especially assigned to that work.

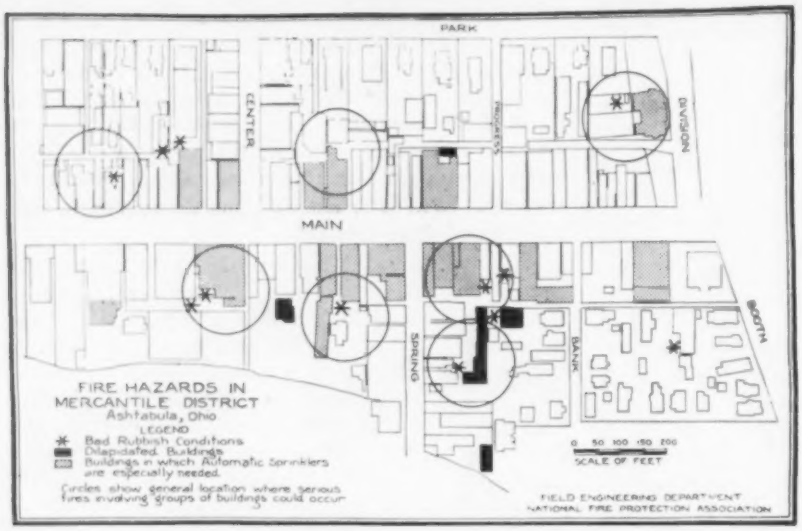
Directing Inspections and Preparing Courses of Instruction

It is not intended that the introduction of a Technical Division into a fire department shall in any way replace the present fire prevention bureaus. The Technical Division, on the other hand, should be an auxiliary to the Fire Prevention Bureau, supplying the necessary information to organize the work of the Bureau along the lines that are indicated by the analysis of the fire losses. For example, by studying the spot maps which show the frequency, location and size of fires, the Division can lay out a definite plan for the location and scope of the inspections to be made by the uniformed forces. Causes for fires in different districts will probably vary widely, and the uniformed men should be instructed as to what hazards to look for, and the manner in which to safeguard those hazards.

Closely allied to this work would be the instruction of officers in technical matters. Courses should be given covering such subjects as the care of inflammable liquids, precautions for safeguarding explosive materials, pyroxylin plastic and its compounds, and other hazardous items. The behavior of fires occurring in properties housing these and similar hazards should be studied in order that the fire-fighting forces may effectively attack such fires. District chiefs should be especially informed on the proper care of any special fire hazards within their districts. Courses should also be given covering the fire-retardant qualities of various building materials, and their adaptability for various uses such as for bearing walls, for partitions, or as protection for steel.



A FIRE SURVEY RECOMMENDATION IN BOSTON
A study of fire location spot maps for a one- to five-year period provided the basis for location of these blocks



Inspection of Industrial Hazards

Modern industry has introduced many new fire hazards into every city. Each day, the fire records of large cities bear evidence to the fact that some fire hazard has been improperly safeguarded. There is no process, however dangerous, which cannot be reasonably safeguarded against fire by the application of sound fire prevention engineering methods. It is in matters of this kind that a Technical Division can perform most valuable service.

It cannot be expected that firemen untrained in technical matters will be able to competently pass on the protection of highly specialized industrial fire hazards, and this work should be one of the functions of the Technical Division. Once established, the Division could gradually set about to clean up all major fire hazards of the city. By educational publicity work, frequent inspection and personal contact, various industries could be prevailed upon to adequately protect their hazards. Such processes as lacquer spraying, woodworking, use of pyroxylin plastic, reclaiming of petroleum products, etc., should receive adequate attention from the Division's Engineers.

With such a service available, the public will gradually realize the value of authentic information as to the best procedure to follow in caring for any particular fire hazard. The public's only real contact with the fire department may be with the engineers of this Technical Division, and it is expedient that the personnel of the Division be of the highest caliber possible, adequately trained, and capable of rendering efficiently this specialized service to the community.

Coordination of Fire Prevention Agencies

In any city there are usually several independent agencies performing fire prevention inspections, each operating within its own particular sphere. Such agencies include the state and city authorities, and the inspection or rating bureaus maintained by the stock and mutual fire insurance companies, as well as many engineers employed by the larger local insurance agencies. At present very little has been accomplished by way of coordinating the work of these organizations.

The Technical Division could perform valuable service by inaugurating periodical conferences among these organizations, at which ideas could be exchanged and a concerted attack on the city's fire hazards planned.

Practicability of a Technical Division

Every city or town should attack its fire problem along the general fact-finding lines indicated. It is probably only the larger cities, however, that can afford the expense of maintaining a permanent Technical Division as suggested in this article. In those cities or towns which cannot afford a permanent staff of this character, it would be advisable to have some trained fire protection engineering organization conduct periodical studies of the fire-waste problem and outline methods for the control of fire in the community.

1928 Financial Statistics of Cities Over 30,000

OF the total municipal payments of the 250 cities in the United States having a population of over 30,000 for the fiscal year 1928, 54.6 per cent was for operation and maintenance of general departments; 4.8 per cent, operation and maintenance of public service enterprises; 10.1 per cent, interest on debt; and 30.5 per cent, outlays for permanent improvements, according to a summary published by the Department of Commerce.

Education, with 38.4 per cent, led the payments for *operation and maintenance* of general departments; 19.7 per cent went to protection to person and property; 8.6 per cent, general government; 8.5 per cent, highways; 7.6 per cent, sanitation or promotion of cleanliness; 6.4 per cent, charities, hospitals, and corrections; 5 per cent, miscellaneous; 3.4 per cent, recreation; and 2.4 per cent, conservation of health. The principal items of the total payments for outays for *permanent improvements* were $389,688,125, or 37.6 per cent, for highways; $178,675,794, or 17.2 per cent, for education; and $156,135,016, or 15.1 per cent, for public service enterprises.

The per capita net governmental-cost payments for operation, maintenance, and interest for 146 cities covered by the various census reports since 1903 have risen from $16.41 in 1903 to $54.43 in 1928. The 1927 figure was $52.64, while in 1917 it was $24.58. The per capita net debt of these 146 cities was $139.63 in 1928, $134.27 in 1927, $80.75 in 1917, and $44.71 in 1903.

The net indebtedness (funded or fixed debt less sinking-fund assets) of the 250 cities amounted to $5,828,141,561, or $134.07 per capita in 1928, an increase of 6.4 per cent over that for 1927. A comparison of the aggregate increase in net indebtedness with the total payments for outlays discloses the fact that 32.5 per cent of the permanent improvements for 1928 were financed from proceeds of bond issues.

It is stated that these statistics cover the government of the city corporation proper, and also independent school districts, sanitary districts, park districts, and other independent districts practically coextensive with the cities. They also include a per cent of the financial transactions, debt, and tax levies of the county governments for cities having over 300,000 population, in order that the statistics for such cities may be comparable with those for other cities in this class in which the ordinary county functions are performed by the city government.

County System of Parks and Recreation Proves Its Value

By **W. RICHMOND TRACY**
Engineer and Secretary,
Union County Park Commission,
Elizabeth, N. J.

THE normal year-by-year growth of a well-organized county park system, and the increasing enthusiasm of large numbers of people for both active and passive outdoor recreation, where such recreation is made easily available in an attractive environment, is well demonstrated in the official records of the Union County, N. J., Park Commission. Attendance figures for the first nine months of the 1930 season total 3,250,000—an increase of 764,656 above the attendance for the corresponding period of the year 1929, and an amount already exceeding the 1929 total by several thousand.

Last year, according to official records, a total of 2,634,062 persons enjoyed the facilities of the park system. That number represented 645,126 persons, or a 32 per cent increase over the 1928 figures, which in turn showed the phenomenal increase of 700,000 persons over the 1927 attendance figures.

More Sports—More Plays and Spectators

A steady gain is shown, year by year, in nearly every major and minor sport. Although hikers and strollers, motorists and children at the playgrounds comprise about one-half of the total attendance, baseball, picnics, boating, soccer, and bathing show the greatest increase in participation, ranging from 265 per cent to 495 per cent during the three-year period, 1927-1929. Big attendance gains in football, baseball, swimming, tennis, track meets and other of the major sports show also that the county's spectators who love to watch these matches are yearly given more opportunity to do so. Many minor forms of sports indulged in by only a few enthusiasts prior to the development of appropriate facilities in the county parks, are now highly popular with players and spectators on a number of areas.

There are 15 playgrounds in the system, maintained, equipped and supervised entirely by the Commission staff. Last year these served 482,487 children from the 20 municipalities within the county. This was a gain of 132,321 over 1928, and was partly due to the opening of several new areas at Union, Garwood, Springfield, and Scotch Plains, and one new area at Mattano Park, Elizabeth. Many children are attracted by the big new wading pool and other features at Mattano Park.

Bathers totaled 119,346. Although thrown open for the first time at the approach of autumn weather in 1929, the Commission's big pool and sand beach at Rahway* is taxed to capacity during warm weather. Lake Surprise in the Watchung Reservation is a mecca for thousands, many taking advantage of free swimming instruction in classes, furnished by the expert lifeguards.

Baseball drew 231,116 players and spectators; football, 148,605. Track and field sports brought 126,520; soccer, 45,391. There were 51,806 tennis players. Cricket attracted 15,065; there were 6,907 lawn-bowlers. During 1930, to September 1, attendance figures totaled, for baseball: 249,500; tennis, 48,483; swimming, 214,635; track, 60,000; soccer, 24,652; cricket, 14,002; participation in all active sports totaling approximately 2,728,025.

Fun All the Year Round

There were 36,170 skaters on 7 lakes and ponds within the system. Fine winter weather during January brought this total up to 64,903, with the ice at a thickness of 10 inches on a number of the lakes. At Lake Surprise in the Watchung Reservation, this sport lasted over a period of 17½ days, with parties enthusiastically hiking into the region even when the roads were too slippery for transportation uses. A cheery fire was kept in the log-cabin shelter. Ice-boats appeared on the lake; hockey was also

A SECTION OF FORMAL GARDEN

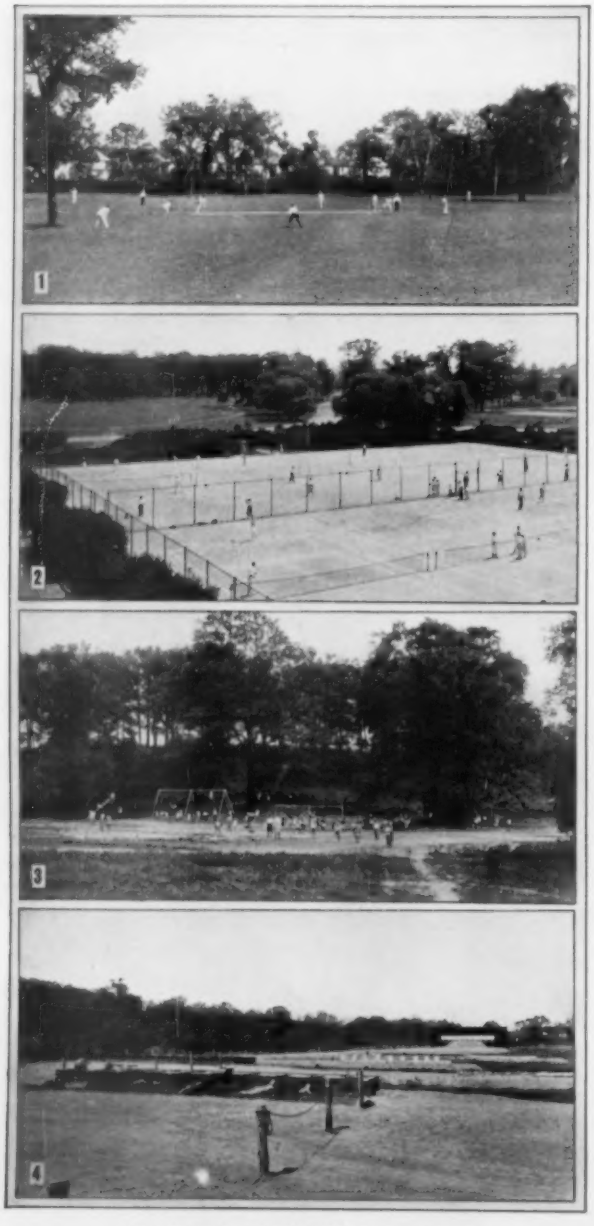
One of the most outstanding features of the Union County Park System is the fact that practically every type of recreation land development is to be encountered within it, from flower borders in carefully detailed landscape design as shown above, to areas of mountain forest

* Illustrated and described in The Municipal Index for 1930, page 506.

played, and there was skiing on many trails.

The golf season last year lasted from April 13 to December 2, with a total of 42,877 players registered, as compared with 19,755 in 1928. The great increase was attributed in part to enlarged restaurant facilities, which were provided by the glassing-in of the north porch at the field house. For the first eight months of 1930, the total reached 35,987.

Season tickets good for use at any time at the splendid 18-hole Galloping Hill Golf Course, are sold to county residents at $25 each and are very popular. One interesting feature of the record is that there were more players on week-days than on Saturdays, Sundays, and holidays; and that there was no increase in the week-end attendance by outsiders over such attendance on week-days. Work is progressing on an additional 9 holes, and it is expected that the entire 27-hole course will be ready for use early in the 1931 season.



ACTIVE PLAY AREAS OF THE SYSTEM

1. A glimpse of the cricket pitch at Cedar Brook Park, Plainfield. 2. An always popular spot—the tennis courts at Elizabeth-Roselle, in Warinanco Park. 3. Playgrounds for younger children; a section of the county development in Union, N. J. 4. The Nomahegan Park rifle range. This is one of the features of the Union County Park Commission's program of special appeal to adults. Marksmen may be seen in the foreground

Horseback riding shows a consistent gain in popularity largely because of the twenty-five miles of bridle trails in the Watchung Reservation, where the Commission owns a large riding stable, and special attention is given to teaching children and adults to ride. County-wide interest in nature study has been manifested practically in every unit of the Union County Park System, especially during the past year, when several new clubs were organized. Elizabeth, Plainfield, Cranford, Rahway, and Roselle Park now have thriving nature units and there is every indication of a future federation of nature clubs in the county for the advancement of this growing diversion.

Shooting and Bowling—Special Events

The Commission's programs are designed notably to serve the greatest number of county citizens. The stock criticism that organized recreation offers nothing to grown men is here forestalled by such diversions as rifle, pistol and trap shooting, bowling on the green, croquet, camping, fishing, nature study, etc.

The newly opened rifle and pistol range, at Cranford, is practically danger-proof in its unique design, and has received much praise from the National Rifle Association. A police pistol league is popular, and the range is filling a long-felt need for these facilities.

Special competitive programs in trap shooting are provided. The trap shooting committee consists of five members, each representing a different community. Team shoots are participated in by gun clubs from various parts of northern New Jersey. The construction of the bowling green at Green Brook Park was followed by the organization of a club at Plainfield, which is the largest in the entire New York metropolitan area.

Special programs, planned to bring together large crowds from all parts of the county, include the annual Easter sunrise services, the Easter egg hunts, music, pageants, playground circus, folk-dancing exhibitions, programs by various foreign national groups, and county championship events in swimming, track, golf, baseball, tennis and horseshoe pitching.

The revenues from self-supporting recreational activities, and from sources other than county funds, increased from $10,316 in 1926 to $127,852 in 1929.

And All This for 3½ Cents of Each $1 Tax

The Union County Park System contains approximately 4,200 acres well distributed in 17 units throughout the county's 20 municipalities. About 90 per cent of this acreage has already been acquired, and the Commission has followed the policy of developing certain recreational facilities in each unit so that the public can make immediate use of each area.

The system is about 50 per cent completed. Although several parkways connecting the various parks and reservation are planned, only a small amount of this work has been done, as it is believed the development of recreational facilities affords more benefits with the limited funds available.

During the eight years of its existence, the Commission has received through referenda vote of the public, $5,000,-

Photographs on this and the facing page are from Capt. R. A. Van Loon

ENDLESS DIVERSIONS ARE OFFERED IN EACH PARK

1. Among them are model airplane making and flying contests. 2. Picnic provisions are plentiful, varied, and always attractive. The one illustrated has for a fireplace the old cellar of a house that occupied the site before wilderness reclaimed it. 3. A canoeing party on Lake Surprise in the Watchung Reservation. 4. Where woodland gives place to upland clearing, the far view is splendid. Such a scene claims the interest of the riders shown above. 5. And here are model sailboat fans. This is a pastime which has more devotees than model plane flying, because boys of more ages participate satisfactorily. 6. County Park System sports in the Warinanco Park Stadium—one of the major building developments of the system—at Roselle, N. J.

000, of which about 40 per cent has been invested in acquiring lands, and the balance in development work.

Several of the recreational activities are self-supporting, and these, with the refectories operated by the Commission, rental of buildings, etc., produce 30 per cent of the maintenance costs, the balance of which comes from the county tax.

County park bonds for capital expenditures on land and development are retired over a fifty-year period so that the annual cost of the Park System is small. The total cost to the taxpayer, including the interest on bonds, their annual retirement and the maintenance of the Park System, represents approximately 3½ cents of each dollar of taxes paid.

At the election on November 4, the people will have opportunity to vote for the issuance of an additional $300,000 in county bonds for further development programs. These bonds would also be retired over a fifty-year period, and add little to the tax burden. This referendum is under the Park Act Supplement of 1906, and is the logical next step in the park's development.

Considering the fact that park lands have an ever increasing value, that their development increases the assessed values of adjoining properties so that the additional tax revenues more than pay for the parks, and that their value is inestimable as regards the health, welfare and happiness of the public, is any expenditure of public funds more justifiable?

New Concrete Pavement in a High-Class Residential District

A Roadway 34 Feet Wide, Built in Four Strips

FOREST Avenue, in the high-grade residential district of the town of Mamaroneck, N. Y., for some time had been in need of an improved pavement. Work on grading a new roadway was started in the late fall of 1929, some ledge being removed and fill begun. The old macadam, which had increased annually in thickness through the application of bituminous surfacing, was broken up by an Acme roller with scarifier attachment. Preliminary work, which started September 25, 1929, but which was stopped during the severe cold of the winter, included the lowering of the gas-mains of the Westchester Lighting Co. and the water-mains as much as 4 to 5 feet, this work being handled by the respective utilities. In spite of quite frequent blasting, no mains were broken, as light charges were used in order to prevent possible damage to property. During the winter, cinders were put in to make a passable 16-foot road.

SCARIFYING THE OLD BITUMINOUS MACADAM PRIOR TO REMOVAL, AND A SECTION OF LEDGE AND FILL

The new construction involved taking only one piece of property, where a sharp corner was rounded. A dozen attractive shade trees were necessarily removed in the widening process. The old road was of varying widths, while the new construction is 34 feet of concrete of 7 inches uniform thickness, laid in two 7-foot strips on the outside and two center strips each 10 feet wide, with concrete curbs 6 inches high and 6 inches wide, battered and laid with Blaw-Knox curb forms on either side. Outside of this is the 6-foot grass plot and the 4-foot concrete sidewalk.

Concreting

The contracts for both grading and concreting were let to Petrillo and Bianchi, Inc., Tuckahoe, N. Y. A large force of hand labor was used in the grading operations. Standard aggregates for the concrete were purchased from the Colonial Sand and Gravel Co., Mt. Vernon, N. Y., and delivered already batched to the job. A 6-bag batch was used, the concrete having the proportions 1:1½:3, mixed 1½ minutes in the Foote 27-E paver.

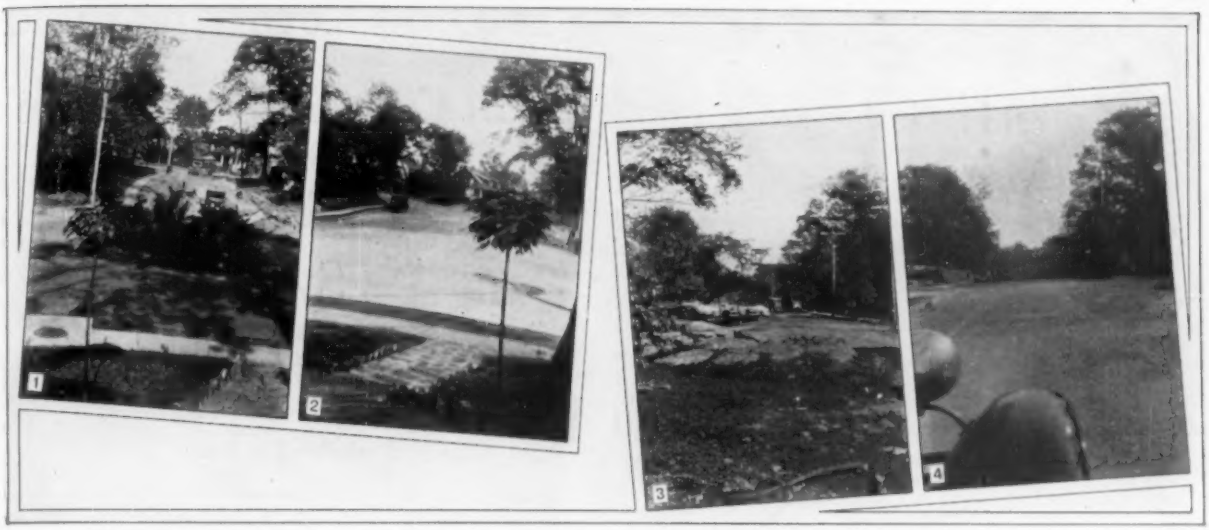
Reinforcing consisted of welded Bar Mats weighing 78 pounds per square yard, and the expansion joints were placed at 50-foot intervals and at the curb, but not between adjacent slabs. The concrete was finished with a hand screed, wood belt, and the usual edging and wire brushing to improve traction.

Property Owners' Interests Protected

At the westerly end of this project 109 yards were paid for by the city of New Rochelle, the remainder of the project being paid for entirely by the town of Mamaroneck. The work included a 4-foot concrete sidewalk with a 6-foot area between the face of the curb and the edge of the sidewalk. This was used for a grass area and greatly adds to the attractiveness of the layout. A 60-foot right-of-way is used for the pavement, park area and sidewalks. A total of 11,000 cubic feet of retaining walls was used for property lines and for the sidewalk in cases where the grade of the roadway was below that of the sidewalk.

Of particular interest is the fact that each property owner was individually consulted by the engineers as to the height of wall, method of caring for trees, and other items of mutual interest to the individual taxpayers and to the community as a whole, before any work was done in front of his property. If such care and respect for the individual property owner was shown in every community, there would be much less friction between the city or village administration and the taxpayers.

At one point a narrow park area was left in the center



TWO INTERESTING PAIRS OF "BEFORE AND AFTER" VIEWS ON FOREST AVENUE

of the roadway in order to save two trees. This area is 10 feet wide and permits a 17-foot roadway on each side. A light is to be placed at each end of the parkway and one in the middle.

Incor cement was used on intersections where it was necessary to permit traffic on the slab within 24 hours, and also for the entire length of the road on the northerly side. All intersections on the northerly side were also laid with Incor cement, and the other intersections were wide enough to pour half of the intersection and by-pass traffic while either half was under construction.

Acqua-Pruf, a waterproofing and hardening compound, was used at the rate of one quart per bag of cement on a section of 300 feet between Weaver Street and Murray Avenue.

A series of tests on the strength of the concrete was made for the purpose of establishing the minimum safe time elapse between the date of pouring and the date of opening for traffic. Several test cylinders were made from every day's pouring, and were tested in the laboratories of the Robert W. Hunt Co. in New York City. Satisfactory results were obtained from both the Incor cement and the Acqua-Pruf admixture. Traffic was permitted to use the road when the test cylinders showed a strength of 2,500 pounds per square foot.

The road was completed, with the exception of the Murray Avenue intersection, on July 1, 1930. The work was designed, and the construction supervised by the A. J. Foote Engineering Corporation, of Larchmont, N. Y., acting as Engineer for the Town Board of the town of Mamaroneck, of which George W. Burton is Supervisor, and John L. Coles is Superintendent of Highways.

A PANORAMIC PICTURE OF FOREST AVENUE, SHOWING THE COMPLETED PAVEMENT AT AN INTERSECTION

THE SEWAGE PUMPING-STATION, BRIDGEPORT, PA.

$100,000 Revolving Fund Built Complete Sewerage and Sewage Disposal System

By **FRANCIS S. FRIEL, M. Am. Soc. C.E.**
Of Albright & Melbus, Engineers,
Philadelphia, Pa.

THE borough of Bridgeport, Pa., located along the Schuylkill River ten miles above Philadelphia, has recently completed a sewer system and sewage treatment works. The city of Philadelphia obtains part of its water-supply from the Schuylkill River, and in order to protect this supply the Pennsylvania Department of Health required the borough to treat its sewage prior to discharging it into the river. The outstanding feature in the installation of this system was the method of financing the construction of a $255,537.38 project with a bond issue of $100,000.

It was the desire of Council to build a complete system for both sanitary and storm-water sewage. The topography of the borough was adapted to a combined system of sewers handling both storm and sanitary drainage in the same lines. The cost of the sewers was assessed against the abutting property owners, and the cost of the treatment works and main outfall sewer was carried by the $100,000 bond issue. For the installation of the sewers, the borough was divided into two districts, and the $100,000 bond issue was used as a revolving construction fund. Upon completion of the sewers in the first district, the property owners were permitted to make connections, thus providing for the collection of the recoverable front-foot assessments. A permit was obtained from the Department of Health to temporarily discharge the raw sewage into the river prior to the construction of the sewage works. After the first section was completed and placed in operation and the assessments were collected, the sewers in the second district were installed, house connections made and assessments collected. The main outfall sewer and the sewage treatment works were the last part of the project to be constructed, and the cost thereof was paid for by the general bond issue.

The Sewer System

Prior to the preparation of the comprehensive sewer plan the borough had constructed several combined sewers, and it was desirable to utilize these lines in the comprehensive sewer plan. The new system was provided with a main outfall sewer, paralleling the river, which intercepts the dry-weather flow from the combined sewers. At the junction of the combined street sewers and the main outfall sewer, storm-water overflow regulating chambers were installed to control the quantity of sewage flowing to the treatment works during times of rainfall. The regulators are constructed to intercept a quantity of storm water equal to 10 per cent of the maximum dry-weather flow, which represents the first flush of rainfall. This first flush contains the deposit from the sides of the sewers and the filth from the street surface and is usually more polluting than the ordinary dry-weather flow of sewage. The main outfall sewer is 20 inches in diameter and is built along the edge of the river. It was necessary in the construction of this line to install either a cast iron pipe sewer or a vitrified pipe sewer encased in concrete. Alternate bids were received for both types of construction and it was found cheaper to install cast iron pipe.

The branch sewers vary in size from 8-inch vitrified pipe lines which carry only sanitary sewage, to a 27-inch pipe which carries both storm water and sanitary sewage. The system throughout, exclusive of the outfall sewer, but including the 6-inch laterals to the curb line, was constructed of vitrified pipe. In dry excavation the sewer was laid with cement joints. A large portion of the system, however, was built in wet ground, in which case the vitrified pipe was laid with cement joints and one-half the pipe line encased in a concrete cradle.

The method of construction necessitated excavating the trench 6 inches deeper than the flow line of the pipe and pouring a 1:2:4 mix concrete base. This foundation was allowed to set for 24 hours before the vitrified pipe was laid with 1:1 cement joints. The lower half of the pipe was then encased in a concrete cradle. The ground water was not allowed to rise over or flow through the sewer for a minimum period of one day after the concrete was poured. The total leakage in that portion of the system laid in wet ditch was at the rate of approximately 100 gallons of infiltration per mile per day per inch diameter of pipe.

To provide proper cleaning facilities, manholes were constructed at all junction points in the system, and the maximum spacing was limited to 300 feet.

Grit Chamber and Pumping-Station

The entire sewage from Bridgeport flows by gravity to the lower end of the borough. At this point the elevation of the sewer necessitated pumping the sewage to a higher level in order to provide sufficient head to pass the sew-

age through a treatment works by gravity; and also to protect the plant from river floods.

The streets of Bridgeport are surfaced with penetration macadam, and during times of heavy storms, quantities of grit from the streets are washed into the system. To prevent this material from reaching the pumps and sewage treatment works, a grit chamber was installed at the head of the pumping-station. The grit chamber consists of two open channels each 2 feet 6 inches wide and 40 feet long, through which the sewage is passed at a slow velocity. A bar screen was placed at the inlet to this chamber to collect any heavy material which may find its way into the system, such as tin cans, sticks, etc. The grit chamber is cleaned after every storm, and this is done by closing a compartment, draining the supernatant liquid, and shoveling the grit from the basin. This material, which is free of organic matter, has been used for filling around the property.

The sewage flows by gravity through the grit chamber and then passes into the wet well of the pumping-station. The pumping-station is divided into a wet well for the raw sewage and a dry well for the sewage pumps. Two valved lines connect the pump suctions with the wet well. The wet well is subdivided into two compartments, and a sluice-gate has been installed in the division wall. This facilitates flexibility in operation and provides a means for cleaning out the well while the pumps are in operation. Twice weekly each compartment in the wet well is pumped out and any organic solids which may have settled on the slopes of the floor are washed to the suction pit by means of a fire hose and pumped to the treatment works.

The vertical centrifugal pumps are in duplicate and are of the non-clogging type, with 6-inch suction and discharge openings. The pumps each have a capacity of 500 gallons per minute when operating at a speed of 1,150 revolutions per minute, and the open impellers are constructed to pass a solid 4 inches in diameter. The pumps are located at an elevation to provide a positive suction at all times. This was necessary in order to operate the plant automatically. The automatic control switchboards and the motors are set on the upper floor of the pumping-station. This equipment was placed at the upper elevation to prevent it from being flooded during times of high water in the river. The floor upon which the starters and motors are located is constructed above the maximum recorded flood level in the Schuylkill River.

The starting equipment provides for overload and phase-failure protection, and is operated by floats in the wet well which automatically start and stop the motors when the sewage level reaches a predetermined maximum or minimum. The float switches are arranged at slightly different levels so that either pump may be given the lead and in case of failure of one unit the second will automatically step in and carry the load. Liksewise, if the quantity of sewage to be pumped is too great for one pump to handle, the second will automatically operate. The cost of labor to maintain the pumping-station has been reduced to a minimum by the installation of the automatic control apparatus. The operator visits the plant twice daily to check up on the apparatus. To obtain records of the quantity of sewage which passes through the pumping-station and treatment works, gages were installed which record the pressure, time and period of pumping. The pumping-station building is heated with thermostatically controlled electric heaters.

The Force Main

The sewage is pumped to the treatment works through a 10-inch cast iron force main 1,650 feet long against a head of 45 feet. The force main is constructed of Class "B" American Water Works Standard cast iron pipe, and it was laid with lead joints. The pipe was tested before the trench was backfilled. The tests were conducted by filling the force main with water, exhausting the air, and blocking and tapping the upper end of the pipe. The line was then put under pressure by means of a hand pump equipped with a check valve and gage. The quantity of water pumped into the line was measured for each 5 pounds increase in pressure. The time was then taken for the pressure to drop between the 5-pound increments and the results converted into gallons leakage.

The Sewage Treatment Works

The sewage treatment works was designed for a population of 6,000 people and for a water consumption of 100 gallons per person per day, plus an additional 10 per cent above the maximum dry-weather flow. This allows a rate of flow of 1,000,000 gallons per day.

The disposal works provides only for the preliminary treatment of sewage and consists of sedimentation and chlorination. The settling-basin is a two-story tank of the Imhoff type with a reverse flow channel. After leaving the Imhoff tank the sewage is treated with liquid chlorine and passed through a contact chamber, with 15 minutes' retention, before it is discharged into the Schuyl-

THE BRIDGEPORT SEWAGE TREATMENT WORKS

VIEW OF SETTLING TANK AND CHLORINATION HOUSE

kill River. The chlorinator house is divided into two rooms. A chlorinator is located in one room, and in the other a pump has been installed for circulating and liming the sludge. Normally, sludge may be drawn from the Imhoff tank onto the sludge bed by gravity. However, the sludge pump may be used to withdraw solids from the Imhoff tank and it is also used to pump sediment from the contact chamber either to the Imhoff tank or to the sludge bed. The sludge pump is a horizontal non-clogging type centrifugal pump capable of passing 3-inch diameter solids.

The sludge bed is 50 feet x 100 feet in plan and is divided into four compartments. The design of the works provides for the future installation of an oxidizing unit consisting of a siphon chamber, a sprinkling filter and a secondary settling-tank. A chain link fence 6 feet high encloses the sewage treatment works, and the grounds surrounding the property were carefully graded, seeded, and planted with evergreens and flowering shrubs. Landscape development is an important feature in the plans of a sewage treatment works built near habitations, and at Bridgeport care was taken to make the surroundings pleasing in appearance.

The following is the cost of constructing the system complete:

Item No. 1—Sewer system	$162,327.99
Item No. 2—Main outfall sewer	38,209.39
Item No. 3—Grit chamber, pumping-station, force main and sewage treatment works	55,000.00
Total cost of construction	$255,537.38
Item No. 4—Total length of sewers, 8 inches to 27 inches	37,600 feet
Item No. 5—Total length of 6-inch lateral house connections	4,100 feet
Item No. 6—Average cost per foot of items No. 4 and No. 5	4.32
Item No. 7—Length of outfall sewer, 20-inch C. pipe	3,740 feet
Item No. 8—Average cost per foot of item No. 7	10.22

Assessing Costs

The cost of constructing the main outfall sewer, grit chamber, pumping-station, force main and sewage treatment works was borne by the borough, while the cost of the street sewers was assessed against the property owners. Corner properties were exempt 100 feet on the long side, this cost being paid by the borough, together with the cost of street intersections. The assessment per front foot of property was $3.50.

Operation

The system has been in operation since the spring of 1929, and the results obtained at the sewage works indicate that it has been producing a good effluent for a preliminary type plant. There has never been a complaint about odors. The operator spends approximately two hours at the treatment works every morning and again visits it in the late afternoon.

Engineering

The design and construction of the sewer system and sewage treatment works was in charge of Albright & Mebus, engineers, of Philadelphia and Glenside, Pa. The writer had direct charge of the design and installation.

The Increasing Use of Radio in Catching Criminals

POLICE departments in 21 cities throughout the country are at present using radio in the apprehension of criminals, and so successful has such use proved that in 22 other cities police department radio installations are under way.

Cases are constantly reported of robbers caught within a few minutes after hold-ups. Radio-equipped automobiles patrol the city and are ready to speed to the scene of a crime immediately upon receipt of a signal.

Places where police radio systems are already in use are: Minneapolis, Minn.; Township of Grosse Pointe, Mich.; Cedar Rapids, Iowa; Dallas, Texas; Miami, Fla.; Flint, Mich.; Chicago, Ill.; Cincinnati, Ohio; Cleveland, Ohio; Indianapolis, Ind.; New York City; St. Paul, Minn.; state of Massachusetts at Framingham; Detroit, Mich.; Highland Park, Mich.; Pennsylvania State Police at Harrisburg, Pa.; Butler, Wyo.; Greensburg and West Reading, Pa.; Tulare, Calif.; Seattle, Wash.; Passaic, N. J.; Louisville, Ky.; St. Louis, Mo.; Columbus, Ohio; Pasadena, Calif.; state of Michigan; Ingham Township, Richmond, Ind.

A Riverfront Is Transformed

By **BURTON T. BURRITT**

EARLY this year Memorial Park took its place among the assets of Greater Waterloo, Iowa. It is one thing to acquiesce in a civic improvement. It is another to originate it, push, preach it, realize it. Many men and women have had part in the transformation of the river banks in the heart of the city into a beautiful park. One man, Hermann Miller, has been the prophet, missionary, financier and foreman.

The east and west banks of the Cedar River between Fourth and Sixth Streets fifteen years ago were covered with weeds and willows which made poor shift to conceal cinder buttresses strewn with rubbish. Eight years ago, a river wall was built along the east bank—a majestic parapet. The west bank offered greater difficulties. The Y.M.C.A. and the Syndicate buildings stood at the water's edge on Fourth Street. To the west of them ran an old mill-race, relic of the days of the water-ground wheat in a prairie state. Of the mill buildings, only one remains and it has been incorporated into a block of stores. Yet, till last year water still flowed through the old mill-race, which debouched into the river, making the channel much wider than above and leaving only a narrow strip of soil between Memorial Hall and the river.

Dignity from Disorder

Today, a green-lawned garden invites the eye across what was formerly this backwater of the river. A park has been built on land which has been made without encroaching on the main channel of the river or increasing materially the flood hazard. This terraced park has been brought to almost final form between Fourth and Fifth Streets, and work on the strip between Fifth and Sixth is progressing and will be finished by next year. A place of loveliness and peace has been created out of dirt and disorder through work and faith.

THE RIVERFRONT SITE "BEFORE"

MEMORIAL PARK TODAY

The plan for this park was born in Miller's mind fifteen years ago. He had sketches and specifications drawn, showed them to his friends, to business men, to city officials. He received approbation from nearly all. Yet there were obstacles. There was the mill-race to be got rid of. There were property rights to be satisfied. There was the problem of finding the money to finance this ambitious scheme.

A Rubbish-Dump Foundation

Finally, four years ago, Miller sought and obtained election to the riverfront commission. An insurance company manager, he made the development of this riverfront park a hobby that was almost a business. By careful management the cost of this park has been kept to a figure which is very low indeed. The earth alone for this stupendous fill, even at the lowest current price, 50 cents a load, would have cost $90,000. Yet the park is being built and terraced and landscaped and fitted with walks and stairways and walls and fountains, at a cost which will not exceed $35,000. The part which is now completed cost only $15,000. The part between Fifth and Sixth Streets will cost $20,000 more.

Lacking money to buy fill, the riverfront commission made a dump out of the river bank. It invited all the people of Waterloo to bring or send their rubbish to this park site. The placing of this rubbish was carefully supervised. A wall was built in the river marking the proposed outer boundary of the park. Terrace lines were established. And over a period of a few years the fill has been made and the only expense for earth has been for the top layer.

Tin Can Park Justifies Itself

When the wall was built in the river, it seemed a long way from the then shore. It seemed that the realization

of this plan would require a long time indeed. Yet day by day the work of filling went on. People joked a little about Miller's tin can park, his beauty-spot of old auto tires. Yet quite suddenly this spring the fill was completed, the top earth was put on, trees were planted, flower beds laid out, sod was brought and laid, and grass seed sprouted; so that 60 days of wonder working transformed the dump into the park. Citizens rubbed their eyes. The thing was done.

From the old railing which once marked the water's edge just back of Memorial Park, the ground now falls in a graceful terrace to the main broad level of the park. Hedges and shrubs of many kinds, all carefully selected with a view to the general scheme, border the walls and walks. A double-curved stairway leads down from Memorial Hall to a marble fountain, the latter the $6,000 gift of the Sons of Union Veterans, supported by the people of Waterloo. The fountain, with its central spray, its three lions' heads and its spacious marble basin, is a gracious memorial to the Union soldiers in the Civil War. The fountain centers the landscaping of the park.

From the main park level another terrace leads down to a narrower level at the waterside, where a walk rims the water.

A Snow-Removal Discussion

Group of Officials Comment on Report of American Road Builders' Association Committee

RECOMMENDATIONS for the removal of snow from roads and highways were contained in the report of Subcommittee No. 6 on Snow Removal of the American Road Builders' Association General Committee No. IV on Maintenance, of which Hal G. Sours, County Engineer, Summit County, Akron, Ohio, is General Chairman.

Organization Necessary

Efficient snow removal requires a well-trained organization, ready, like a fire department in local units, to get out on short notice any time day or night. Success depends on catching the snow before it is too deep or packed solid by traffic. Work should proceed on a definite plan and each man must know his duties. The important roads should be opened up first. At the beginning of the snow season, equipment should be placed at strategic points for snow removal.

Removal should start as soon as the storm starts and there should be no time off till the job is finished. If thorough measures of drift prevention have been taken, the difficulties of the work and the amount of equipment necessary will be minimized. All snow should be removed, not only from the traveled surface, but back off the shoulders to provide for drainage and storage space for future snows.

Operators Must Know the Road

OPERATORS OF SNOW-REMOVAL EQUIPMENT MUST BE FAMILIAR WITH ROAD FEATURES TO PREVENT DAMAGE TO BRIDGES, CULVERT HEADWALLS AND OTHER STRUCTURES

Operators of snow-removal equipment should be thoroughly familiar with road features so that even when these are covered with snow they will know the location of culvert headwalls, guard-rails, road signs and markers, and wide and narrow places. This is necessary to minimize damage and keep down the indirect costs of snow removal. And all possible care should be exercised to keep the blade ½-inch above the road surface.

Equipment should be operated at the highest speed consistent with safety, and the blade should be given all the angle possible in snows over 4 inches deep. This is necessary, not only in order to cover the scheduled mileage quickly, but to throw the snow several feet clear of the road.

Safety Measures

Extreme care is necessary to prevent accidents in case of bad curves or steep grades or stalling of equipment. It is a good plan to be prepared to send out watchmen promptly in such emergencies.

As a safety measure, many counties provide storage, in the fall, of sand, cinders, granulated slag or other suitable fine, gritty material at places where icy surfaces are likely to cause accidents, such as steep grades, sharp curves, railroad crossings, intersections, etc. Calcium chloride and common salt are being used for the same purpose. One-half to three-fourths pound of calcium chloride per square yard is used and applied as on gravel roads.

Two rather unusual cases of snow removal are here cited in the hope that they may prove helpful.

The Battle Mountain Road in Colorado is 500 feet above a railroad on the mountain side. It is out of the question to push snow off onto the railway tracks. The plan used is to windrow the snow in the center of the road and shoot it completely over the railroad and into the Eagle River below, using a rotary plow.

It is reported that plans were being made to clear the Glacier National Park Road when the time came to open it this spring, by sluicing, since there is ample water in nearby gulches. In this location snow slides bring down trees and heavy boulders, making the use of rotary plows impractical.

Drift Prevention

This report also stated that the drifting of snow is at the bottom of snow-removal problems. If drifts could be prevented from forming on the road, the problem would be greatly simplified. There are two ways in which this may be done—by removing the cause of the drift, and by causing the drift to form and store the snow before it reaches the road. Anything that causes a reduction in the velocity of the air carrying the snow will cause some of the snow to fall in a drift. Uncut weeds, brush, trees, hedge, gates and fences are some of the obstructions that may often be easily removed and thus no longer cause drifts. A survey of snowdrifts during one winter will reveal these causes, and steps can be taken to eliminate them.

There may be cases where even the relocation of the road is justified. Snowdrifts are worst in flat country and where wind velocities are high in winter. It is the practice in some western states where this condition is aggravated to lay the grade line 12 to 18 inches above the adjoining land, avoiding cuts if at all possible. This would likely not be justified in most other localities.

The greatly increasing popularity of the snow-fence indicates its effectiveness and practicability. The problem of placing it correctly is an intricate one. Topographical features, buildings and the direction of the wind all must be considered. This may call for setting the fence parallel to the road and anywhere from 50 to 200 feet away; or it may mean setting the fence at right angles or at some other angle to the road direction. Each location is a problem in itself, and the results will be in keeping with the care and study put on it. A good set-up may induce a drift several feet higher than the fence, while a poor one may produce no drift at all.

Wood or steel vertical picket fence is most used. Iron posts are driven into the ground, and the fence attached late in the fall.

A type of steel fence is now on the market which can be loaded in large quantities on trucks and, if desirable, placed while drifts are forming. This is vertical or horizontal in type, rigid or demountable, and made up in panels. The horizontal panel fence can be placed nearer to the road than the vertical.

Comments of County Engineers on Snow-Removal Report

Various county engineers in the United States have offered discussions of the report of the Snow Removal Committee. With reference to the use of snow-fence, the following observations have been submitted:

A. D. Finch, of Fayette County, Iowa, writes: "In the corn belt, standing cornstalks form one of the most efficient means of drift prevention. Consent of the farmer to allow stalks to remain in the field for a distance of several roads back from the highway should be obtained whenever possible."

From Ashtabula County, Ohio, the following remarks come from *E. N. Luce:* "Where long drifts are encountered, 100-foot lengths of snow-fence may be spaced 50 feet apart and thus economize 50 per cent on the cost. The practical side is that even a light truck will gather enough momentum in 100 feet to pass through a large drift that is not more than 50 or 60 feet in length."

F. W. Denner, of Garfield County, Okla., says: "I agree that the most efficient way to provide 'open roads for winter traffic is to use means for preventing snowdrifts on the roads,' but snow-fences have not been able to accomplish that in this state, and I know of no method that will where the direction and velocity of the wind varies as it does here. Last winter our state roads, protected by well-located snow-fences, were closed by snow until the county plow was released to open them. At the same time, county roads protected by snow-fences did not drift as full as the state roads did. We find removal more satisfactory and more economical than using snow-fence."

EXTREME CARE IS NECESSARY WHEN WORKING ON CURVES OR STEEP GRADES TO PREVENT TRAFFIC ACCIDENTS

C. F. Winkler, Gogebic County, Mich., remarks: "Planting of natural snow-fence is not only feasible but practical. It involves, however, not only the cost of planting, but the purchase of wider rights-of-way. Snow-fence can be erected on a farmer's land, but you cannot plant a hedge on his farm 60 or 70 feet back of the right-of-way fence. In all rolling country abounding in cuts and fills, design of the highways when new construction is planned is of vital importance. It actually pays in dollars and cents to make the cuts as shallow as possible and borrow from the sides of these cuts instead of laying a balanced grade line.

The statement in the report, "Removal should start as soon as the storm starts and there should be no time off till the job is finished," has both its adherents and its opponents, and their comments are instructive.

A. D. Finch, of Fayette County, Iowa, states that because of the aggravation of drifting conditions by plowing during the storm, it has become the general practice in the heavy snow-belt counties of Iowa to delay the starting of removal operations until the drifting condition has moderated.

E. N. Luce, of Ashtabula County, Ohio, believes that the statement is too broad and that, although it is generally true that removal should start as soon as the storm starts and the demand of the public is insistent, there are times when it is not practical. He says: "It is my observation that a 50 per cent greater breakdown of equipment will occur within the first 24 hours of snow removal in our worst storms and, frequently, heavy winds and storms continue for more than a day in northwestern Ohio. When the fury of the storm is abated, we find a large part of our equipment out of commission and our men unfit for further duty."

William A. Stickel, of Essex County, N. J., is in favor of the plan, stating that plows are ordered assembled upon predictions of the Weather Bureau and are paid a standing rate until ordered to plow. When 2 inches of snow has

accumulated, plows are ordered into operation.

C. F. Winkler, Gogebic County, Mich., makes the following comments: "At a recent meeting of the Mississippi Valley Conference of Highway Officials, the maintenance superintendent of one of the states represented said that at the beginning of the storm he sends out equipment and it is usually a toss-up which quits first, the storm or his trucks, stating that breakdowns on equipment during storms are the usual, rather than the unusual, thing. This statement to me is an admission that either the trucks used are inadequate to handle the work or that maintenance of equipment is poor, or that they use very poor drivers. Trucks that are purchased for maintenance and that will be used for snow removal must be purchased with the extra grief of snow removal in mind. A cheap truck will not move much snow and hold up under the strain of a severe storm. Too much stress cannot be laid on the absolute necessity of having every bit of snow-plow equipment in the best possible shape at all times. A few dollars spent in the garage will save breakdowns and will delay bodily suffering during a storm on the road. But, above all, buy your trucks and plows of the best that the appropriation will permit."

Chairman Wolfangle says: "There is quite a bit of difference in this part of the country as to the advisability of starting removal as soon as the storm starts. Some of us argue that starting removal with the beginning of the storm wears out men and equipment and accomplishes little while the storm is raging. When the storm has spent its force, and really effective work might be done, the organization is below par in spirit and efficiency, and best results are not accomplished. Others argue that starting removal with the beginning of the storm and continuing without cessation keeps the roads open continuously and makes the work after the storm easier. They say that several reliefs of plow operators should be employed to keep the organization going with full efficiency at all times. However, the practical consideration of securing sufficient experienced men for relief must be kept in mind. We operate by the latter method."

St. Louis Organization Plans for City's Recreation Needs

Reprint from the St. Louis Star

THE Park and Playground Association of St. Louis is conducting an extensive campaign of education for the purpose of informing the public, arousing sentiment, and gaining support for plans to meet the city's present and future recreation needs. The Association is a citizen organization headed by Harland Bartholomew, city planner. Its present intensive activities have been inspired by a recent city-wide survey of resources made by its Recreation Council.

In order to make its educational work as effective and valuable as possible, the Association is conducting extensive researches into conditions both local and general, and is issuing a monthly magazine, *Metropolitan Recreation*, in which pertinent matter is presented month by month. Volume I, Number 1, of this publication appeared in June, 1930, and contained among a group of vigorous and forceful articles a résumé of the findings of the survey, illustrated with charts. In this it is shown that of the city's 100,000 white children between the ages of 5 and 15 entitled to open-air play on supervised grounds, only 64,000 can be accommodated between June 15 and September 1; and that for the rest of the year, only 10,000 are so provided for. The figures for Negro children show much less provision.

Month by month the Association presents to its readers all feasible ways of meeting this present situation without delay. It is also thinking ahead in terms of adequate recreation for the future Greater St. Louis. The city has a present population of a million. Through extension of boundaries and natural growth combined, this figure is expected soon to reach two million for the metropolitan area. Adequate, well-located play spaces are being included in the recreation program for future development, including a system of outer parks.

Subsequent issues contain material of inspirational and informative character on recreation progress elsewhere, and analyses of the local situation by Alfred H. Weyman, Executive Secretary of the Association, and others.

Distribution of the Cost of Acquiring Streets

By PAUL A. BANKSON

City Plan Engineer, New Rochelle, N. Y.

A METHOD of determining special assessments levied against property benefited for a major improvement was recently used with results more satisfactory to the public than usual. In fact, no protests were entered against either the area of assessment or the estimated levy. The improvement consisted in the widening of several disconnected streets and cutting through built-up blocks, including the demolition of a large theater building. Half of the project was in a business district and the other half in a residential-apartment district.

In many cases a city plan with a definite program of improvements will justify, as a part of a whole, an improvement that will not otherwise stand individually. The area of assessment was determined from a study of the Official Map and City Plan predicated on the general principles that:

(a) Where a street improvement is of strictly local benefit, its district of assessment shall generally be limited to a distance of one-half block on each side of it.

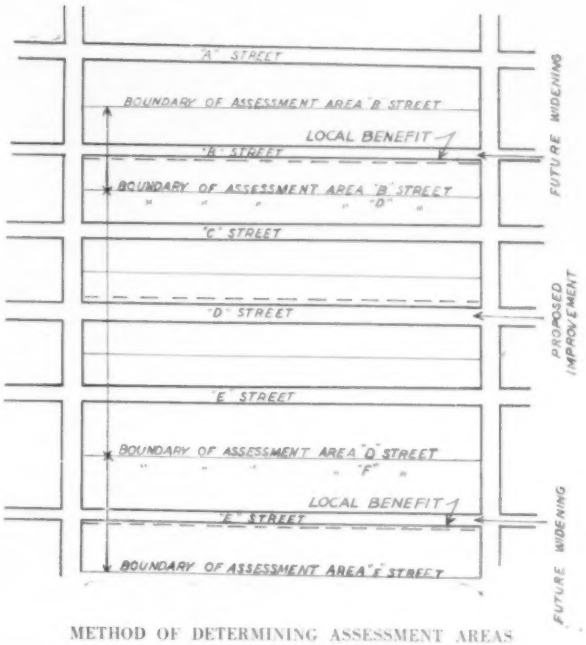
(b) Where a street improvement is deemed to be of more than strictly local benefit, its district of assessment shall be bounded, when practicable, by a line midway between it and the nearest parallel street of the same or greater width, or by a line which is the midpoint between it and the nearest parallel street shown on the Official Map to be improved, or by the boundary of the assessment district of the nearest street to be improved. However, these areas should be limited generally by distances of 1,000 feet and by natural and artificial boundaries. Streets that were formerly assessed for recent improvements should be given due consideration. As the improvements shown on an official map are part of a definite program, there should be no overlapping of assessment districts.

(c) Fifty per cent of the entire net cost was assessed locally and fifty per cent on the city at large. In New Rochelle construction certificates are issued for the city's share, which in turn are redeemed by bond issue. The assessable share is cared for by assessment certificates issued for two years, but redeemable as assessments are paid in.

Computing the Assessments

The area was divided into zones similar to the block-to-block method, i.e., each zone was tentatively assessed on the basis of its estimated net cost. In order to arrive at the estimated net cost, negotiations were carried on with property owners where takings were involved. The various departments charged with such duties submitted estimates of cost, and a summation of these factors resulted in a measurably correct estimate. In certain zones only the abutting property was assessed. In others the area extended beyond the abutting property. The latter comprised secondary and tertiary zones, and the assessment on each parcel was determined from the frontage as a maximum, graded downward to a nominal amount at the boundary of the assessment area.

When the general assessed land value has the semblance of equality, using it as a base insures a fair apportionment. Equitable assessed land values take into consideration and include front foot, area, depth, corner, odd-shaped, shallow and deep lots and topography. These



METHOD OF DETERMINING ASSESSMENT AREAS

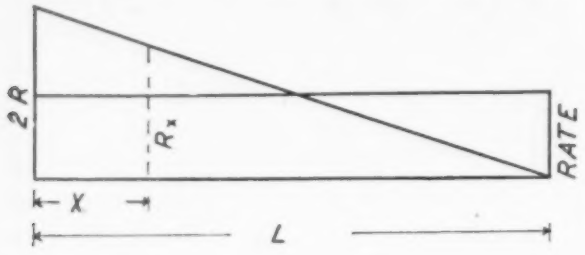
conditions being fulfilled, the assessed valuation of land was used as a base in determining the percentage to be allocated to each zone. Remoteness and availability of streets as through-traffic arteries were accounted for. Having calculated the total and individual lot assessment, the amounts were translated into front footage and comparison made with present and future values. At this juncture the local realty board was consulted and expert knowledge of enhancement was obtained. Analyzing these data, it became apparent just what rates were equitable and what limitations marked the district. In business property the estimated levy was approximately one-fourth of the estimated benefit. In residential property where the probabilities of future use were remote or approximated the state of "resting chiefly in the imagination" and but slightly influenced the price which customers would be willing to pay over a present sale price, the rate was determined accordingly.

The City Charter provided "that a district of assessment be designated including that portion of the city which will be benefited by such improvement." With this in view, the City Council designated the entire area as one district, with a percentage of local benefit as heretofore determined by zones. With a knowledge of the tentative local zone assessment and the average local assessment per front foot, and because of the evidence of following a somewhat definite rule by adhering to the Official Map, which in itself portrays future assessments, there was afforded to property owners an opportunity to estimate the amount which might be levied against any parcel, an intelligent discussion on the equality of the assessment and material assistance to the assessors. The distribution of assessment then resolved itself into a mathematical problem.

When the rate was uniform, the special assessment levied against the zone divided by the current total assessed land valuation in that zone determined the rate for each parcel. Multiplying the rate by said assessed valuation of any parcel determined the special assessment for that parcel.

Uniformly Decreasing Assessment

In the case of a uniformly decreasing assessment the rate changes for every foot frontage from a maximum to zero. Diagramatically, the special assessment, when uniform, can be plotted as a rectangle whose height represents the rate and whose base is the "length of the affected area" represented by the assessed land valuation. When the rate diminishes uniformly from a maximum to zero, the figure becomes a triangle whose height is twice the rate and the base remains the same. The highest rate applies to the point nearest the improvement, while the zero rate is the remotest point. The rate at any point is inversely proportional to its distance from the maximum. (See diagram at left.)



Let R = uniform rate

Let Rx = rate at distance x from maximum

Let L = length of affected area measured in terms of assessed valuation.

x = Distance from point of maximum influence to centre of parcel measured in terms of assessed valuation.

Then $\frac{Rx}{2R} = \frac{L - x}{L}$

$Rx = \frac{2R}{L} \times (L - x)$

$\frac{2R}{L}$ is constant and it is only necessary to determine L — x and solve for Rx.

Multiplying the rate (Rx) by the assessed valuation determines the special assessment for each lot.

It is not necessary to carry Rx beyond four decimals as the resulting error of closure can be distributed proportionately.

Taxation and Orderly Growth

Taxation may not be expected to decrease so long as the wants and desires of our people continue to multiply, but some salvation lies in carrying out a program of orderly growth wherein needless and unwise expenditures may be minimized. Until the millennium shall have arrived there would seem to be no more of a panacea for the burden of taxation then there is for the ills of humanity. Over one hundred and fifty years ago a wise man, Benjamin Franklin, said: "We are taxed twice as much for our idleness, three times as much for our pride and four times as much for our folly, and from these taxes the commissioners cannot ease or deliver us by allowing an abatement." Perhaps this is as true today as it seems to have been then.

In carrying out an orderly program it is hardly necessary to establish separate assessment bureaus or appoint special assessors for such purpose in cities generally. An official map, an equitable general assessment roll, a definite city plan, conscientious and cooperative departments, with some rules of procedure and a calculating machine, will work wonders.

Detroit Takes Special Measures for Unemployment Relief

More Than 85,000 Resident Unemployed Already Registered

AN Unemployment Committee of 101 members, including representatives of every welfare and industrial agency in the city, has been appointed by Detroit's newly elected Mayor, Frank Murphy, to coordinate efforts to relieve local unemployment.

Registration of the city's unemployed was the first step taken. In a three-day campaign 400 volunteer workers gathered data, utilizing 25 precinct police stations and public school buildings; registrations since that time have been made at the central headquarters at a rate of about 500 a day. To eliminate floaters and tramps, only those who have been residents of Detroit for a year or more are allowed to seek relief. All names are checked through the Confidential Charities Exchange. Over 85,000 persons have been registered, some 12,000 of whom indicated they were in immediate need. Approximately one-third of the 12,000 have been found to be already on the rolls of the city Department of Public Welfare or some other charitable organization. The rest were given immediate relief when necessary. All of the cases are now being taken care of through the Department of Public Welfare and the agencies in the Detroit Community Fund.

A central employment bureau has been established which has placed more than 2,000 men, many of them on public work. These positions have gone to men most urgently in need, largely those with big families. The subcommittee on public works, one of the nine subcommittees of the Unemployment Committee, has been canvassing the city government to determine how extensively men can be employd on public works. Some will be taken care of in school building, for which $4,000,000 has been appropriated. The public is to vote on extending the bonded debt limit by one-half of one per cent, and if the proposal is passed it will allow a borrowing leeway of $18,000,000. Recommendations as to types of improvements which are most urgent and which will provide the largest amount of employment are being prepared for presentation to the Mayor.

The subcommittee on creative employment is considering a number of projects, one of which is the consolidation of odd jobs in such a way that a month's steady employment at a time can be given to one man or women, instead of inumerable hourly jobs. Club women are cooperating in organizing districts, and a newspaper drive is assisting.

As a result of several conferences with large employers, held by the Mayor, a certain amount of construction work has been advanced, and a number of employers have been able to increase their forces by staggering shifts, dividing the hours of men already employed, limiting work to eight-hour days, and cutting down seven-day weeks to six.

Voluntary contributions are being made by groups of men who have steady employment. The Police Department, for example, has organized the Detroit Police Quick Relief Association, with contributions ranging from $35 monthly from the Commissioner to $1 from patrolmen, civilian employees and members of the woman's division, totaling over $5,000 monthly.

Of the nine subcommittees of the main group—executive, regularization, research, relief, employment agencies, public works, finance, publicity, creative employment, the one most likely to become a permanent body beyond the immediate emergency is the regularization committee, whose purpose is to study ways and means by which employment may be stabilized to prevent recurrence of the present situation.

England's First Planned Town

Letchworth, The Vision and the Reality

By ALFRED T. PIKE

MAIN SHOPPING CENTER

THE building of Radburn in New Jersey as America's first limited-dividend Garden City forms a useful opportunity to recall the present stage in the development of Letchworth, the first Garden City in England. The conception of Letchworth as a new town in the country came from circumstances somewhat similar to those which caused the birth of Radburn. In the big cities of England, particularly London, industry was being cramped for space. Streets, already congested with vehicles, were having new demands made upon them with the increase in motor-cars. Work-people found traveling to and from their work day by day a tedious and expensive matter. Rents and rates in the center of cities were high to tenants and manufacturers alike. Unhealthy areas began to show themselves, and demanded a heavy toll in disease and infant life.

Industrial concentration has continued, and our people continue to live under conditions of congestion. Great agglomerations have been formed and are still forming, such as the Clyde and Forth towns, the textile towns of Yorkshire, the Potteries, and the Region of Greater London. It has been estimated that 25 million pounds sterling are wasted annually in London owing to traffic delays, and that 20 million pounds are spent annually by workers getting into the center in the mornings and back to the outskirts to their homes at night.

The Garden City Idea

It was the late Sir Ebenezer Howard who saw that an alternative not only was demanded but was possible. He called this the Garden City, and gave his ideas to the world when he published in 1898 his book, "Tomorrow." Howard was not content to leave his theory in a book; it had to be worked out in practice. He gathered around him a number of enthusiastic believers, and a company, First Garden City Ltd., was registered under the Companies Acts, with a limited dividend fixed at 5 per cent. A site was selected in Hertfordshire for the development of the first Garden City, now universally known as Letchworth. Beyond the village of Willian and Norton, the 4,000-odd acres which were purchased in 1903 represented virgin land, upon which Howard and those associated with him were to build a town, the plan, contents and size of which were laid down from the beginning.

Letchworth, the New Town

Letchworth now has an area of 4,483 acres, of which 1,600 acres represent the present area occupied by the town proper. The town was planned for a population of about 35,000, and the utilization of the land was divided into three predominant uses—residential, industrial, and recreational. The original plan was adhered to, and today Letchworth not only is one of the best-planned towns in the country, but is one of the most important manufacturing towns in the Home Counties.

Letchworth has more than 100 factories and workshops, accommodating over 20 different and distinct industries. Ebenezer Howard recognized that a town dependent upon one industry was not economically sound, and the variety of Letchworth's industries has meant that the town has never suffered from acute unemployment or depression. All sections of the motor-manufacturing trade have their establishments in Letchworth; printing, bookbinding and stationery, the manufacture of knitted and woven goods,

GARDENS ON THE CENTRAL SQUARE

WORKINGMEN'S HOMES

A NEW INDUSTRIAL PLANT

form different groups; and perambulators, corsets and organs indicate some of the other industrial activities of the town. The steel foundry at Letchworth sends its light castings to all parts. Not only in this country, but in colonial and foreign countries are to be found articles, big and small, which have been manufactured at Letchworth. The parachute which Miss Amy Johnson carried with her on her Australian flight was made in Letchworth. The house refuse of many towns and cities at home and abroad is collected in the low-loading-level motor freightors made in the town.

A FACTORY EXTENSION PROJECT

Letchworth—Growing

The present population is estimated to be about 15,000, of which something like 4,000 represents those both living and working in the town. In addition, it is estimated that 3,000 come in daily from the surrounding villages and towns to work. Letchworth offers alternative and supplementary employment to the normal occupations of these towns and villages and, while it has itself developed as a prosperous town, it has also kept unemployment away from other areas.

LOOKING DOWN BALDROCK ROAD

To sustain its population and its industries, Letchworth has provided the necessary social amenities. Unlike other towns, where shops are scattered over wide areas, the shops, banks and offices of Letchworth are concentrated in the center of the town, where the business roads converge. Its area of open spaces per 1,000 of the population is not equaled by any other English town. The standard suggested by the National Playing Fields Association is 5 acres per 1,000 of the population, and by the Greater London Regional Planning Committee, 7 acres; Letchworth has 14.5 per 1,000.

In the supply of public services, First Garden City Ltd. has developed gas, water and electricity works. In supplying gas, 125 million cubic feet are produced per annum. The water-works produce 236 million gallons per annum, and the electricity output is 27 million units per annum.

The Local Authority and the Company

Letchworth is governed by the Urban District Council, and as the whole of the land comprising the town is owned by First Garden City Ltd. the local authority has to deal with only one landlord. This is a new experience in English local government, and has enabled the Council and the company to work in harmony in all matters which affect a town. The Council has built 1,153 cottages and a further scheme of 100 is now in course of erection. The rents of these cottages vary from 10/3d to 19/6d [about $2.50 to $4.75] per week, including rates, and in addition to this number over 1,000 cottages have been built by various public utility societies in the town. It may be doubted whether there is any industrial town in the Kingdom which provides better conditions of housing, health, amenities, for all classes than Letchworth.

Living and Working in a Healthy Town

The death-rate last year was 8.3 per 1,000 against a rate of 11.7 per 1,000 for England and Wales. The infant mortality rate was only 62 per 1,000 as against the rate of 74 per 1,000 for England and Wales. Some idea of the space allowed to light and air to do their beneficent work may be gathered from the fact that the population averages only 16 persons per acre over the town area. Dr. Raymond Unwin, Technical Advisor, Greater London Regional Planning Committee, lecturing before the London Society recently, said that if London had been planned on similar lines to Letchworth as a healthy, industrial, residential city and had a death-rate similar to Letchworth's, there would have been a saving in 1928 of 25,834 lives. Further, that if the infant mortality rates for Letchworth had applied to London, there would have been a saving of 3,233 infants. This is a striking testimony to the place which Letchworth has attained as a healthy residential and industrial town.

Finance of the Scheme

First Garden City Ltd. raised much of its capital by the issue of shares, upon which the dividend was limited to 5 per cent. To obtain money readily, mortgages and debentures had to be issued at a fixed rate of interest, which has been regularly paid. In spite of the vicissitudes of the war-time period and the post-war depression, Letch-

worth has reached a sound position, and 5 per cent is now regularly paid upon the shares, in addition to a percentage paid off each year in respect of the cumulative arrears.

The vision and courage of Ebenezer Howard have been justified. Letchworth stands today as the first town in the country to be planned as a whole, a town in which it is healthy to live, work and play, a town where access from its center to the open country is permanently secured by the surrounding belt of open land, protecting it from over-expansion from within and encroachments from without. England would have shown a different face if the million houses erected since the war, and the factories and shops to support them, had been built in Garden Cities such as Letchworth. It is not a question of shortage of space. If London were spread out on the basis of ten houses per acre, and four persons per dwelling, the Greater London region could absorb the rest of the population of England and Wales, and yet have space to spare. It is not the land used which has caused present-day problems, but the land we have spoiled by haphazard and uncontrolled development.

EDITORIAL NOTE.—The term "Garden City," as used in England, has special significance. It is defined by the British town planners as: "A town planned for industry and healthy living; of a size that makes possible a full measure of social life, but not larger; surrounded by a permanent belt of rural land; the whole of the land being in public ownership or held in trust for the community." As yet the United States has no Garden City which meets fully the terms of this definition. The nearest approach to it is probably Radburn, N. J., which, as readers of THE AMERICAN CITY are well aware, is being developed on the limited dividend basis by the City Housing Corporation, of New York.

The Evolution of a Southern Water-Supply

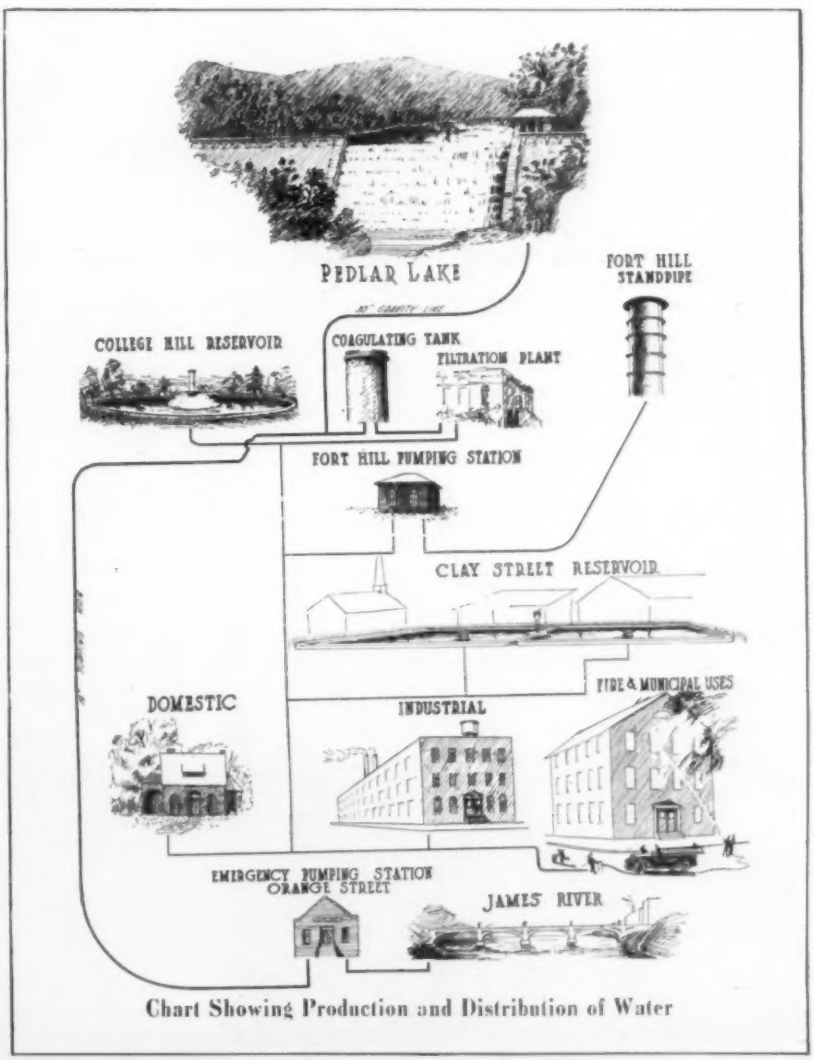
As Recounted to the Taxpayers in an Annual Report

LYNCHBURG, VA., was incorporated as a town in 1805. During the next 25 years the corporate limits were extended five times, and by 1823 the population had increased to 6,000. At that time water was secured from wells or springs, but by 1828 the community spirit had grown to such an extent that a municipal water-supply was contemplated, and in 1829 water from the James River was made available under pressure in homes and places of business by the installation of a pump driven by water-power. This machine was located in a pumping-station along the river at the foot of Orange Street. The river water was pumped to a reservoir located on Court Street.

With the growth of the city it became necessary to add to the pumping equipment and to the piping system. As the town expanded in the direction of Fort Hill, an additional reservoir, known as the College Hill reservoir, was made available, in 1878, and a much larger storage basin, known as the Clay Street reservoir, was completed in 1885.

Source of Supply Changed

For the better part of a century the James River furnished water to the city, but as manufacturing plants located on the river above the source of the supply discharged industrial wastes itno the river, and sewage from Rivermont was piped to the river above the pump intakes, it was necessary to look for a supply more near-



PICTORIAL DIAGRAM USED IN A MUNICIPAL REPORT TO SHOW THE SOURCES OF SUPPLY AND USES OF WATER IN LYNCHBURG

ly free from pollution. Surveys showed that Pedlar River, in Amherst County, would furnish a water-supply sufficient for many years to come, and an excellent site was found for a dam and reservoir with an elevation sufficiently high to deliver water by gravity.

The New Gravity Supply

After some opposition, a bond issue of $700,000 was finally passed, in 1904, and construction operations began. The system consisted of a pipe line of wood, steel and cast iron pipe 30 inches in diameter and 21 miles long, and the construction of a concrete dam 60 feet high and 400 feet long. This construction required nearly three years, and water from the new source was first delivered to the city in September, 1907.

Following heavy rainfalls, there were periods when the water became discolored, and public sentiment finally demanded a water at all times above criticism. To correct this condition, funds were authorized in 1917 for the construction of a modern water filtration plant, which was completed and placed in operation during 1919.

Investment in Filtration Plant

According to the 1929 Report of the Department of Water, the present valuation of the plant is $2,399,848.36, and it is estimated that approximately 40,500 consumers are served. There are 8,989 accounts, and all services are metered, the meters being furnished and set by the city without charge.

The city has two reservoirs with a total capacity of 7¼ million gallons, the water from the Pedlar River being first impounded at Pedlar Lake, which has a storage capacity of 400 million gallons and a catchment area of 33.21 square miles.

There are 21.88 miles of mains and a total of 115.60 miles of service pipes in the distribution system. Services are furnished and laid by the city without charge, from the main pipe to the curb line.

Two electrically driven centrifugal pumps with a total daily capacity of 6,000,000 gallons are installed for emergency service, and two units of the same capacity are used for boosting the pressure during fires and for aeration. The Fort Hill pumping-station for boosting the water pressure in the Fort Hill and West Lynchburg sections, has two pumps with a daily capacity of 864,000 gallons for intermittent service. These pumps are automatically controlled and pump the water into a 300,000-gallon standpipe, the total operating cost for 1929 being only 1.2 cents per 1,000 gallons pumped.

The coagulation and sedimentation basins at the purification plant have a capacity of 860,000 gallons and an average depth of 60 feet, the average detention period being 4½ hours. There are also 12 pressure filters covering a total area of 2,400 square feet with a total rated capacity of 6,000,000 gallons daily.

A Pitometer survey of the distribution system was undertaken during 1929, revealing an underground wastage aggregating 457,000 gallons daily, together with underregistration of three detector meters. The leakage was promptly stopped and the meters corrected, resulting in a gain in revenue of approximately $1,000 per year.

Asphalt and Sawdust Surfacing Prove Practicable for Public Tennis Courts at Tampa

TO construct a sawdust cushion court, which may be used as a tennis court or as a combination court for volley-ball and basket-ball, the Board of Public Recreation of the city of Tampa, Fla., uses the following specifications:

Curb: We build a concrete curb 4 inches in width and 12 inches in depth to surround the hard-surface area. Wood may be used, but it rots within a year or two in our climate, so we have found it more economical to make a permanent curb.

Base: A base, 3 inches thick when compacted, of either Ocala rock (limestone) or rock screenings, is laid. This base is made to the contour which the top surface will have. It is thoroughly wet and rolled so that the surface is even and smooth. After 48 hours of drying, the base is primed with oil (usually crank-case oil) and this priming serves as a bond between the base and the sawdust cushion surface.

A TAMPA COURT

When the priming has thoroughly dried, all the loose dust is swept from the surface, and Texaco macadam binder, which has been heated to about 200 degrees F., is spread over the entire surface of the base. As this is spread hot, it is covered with a coating of sawdust. (The sawdust should pass through a ½-inch sieve.) When the surface has been completely covered with a coating of sawdust, a water roller (200 to 300 pounds) is used to roll the sawdust into the macadam binder.

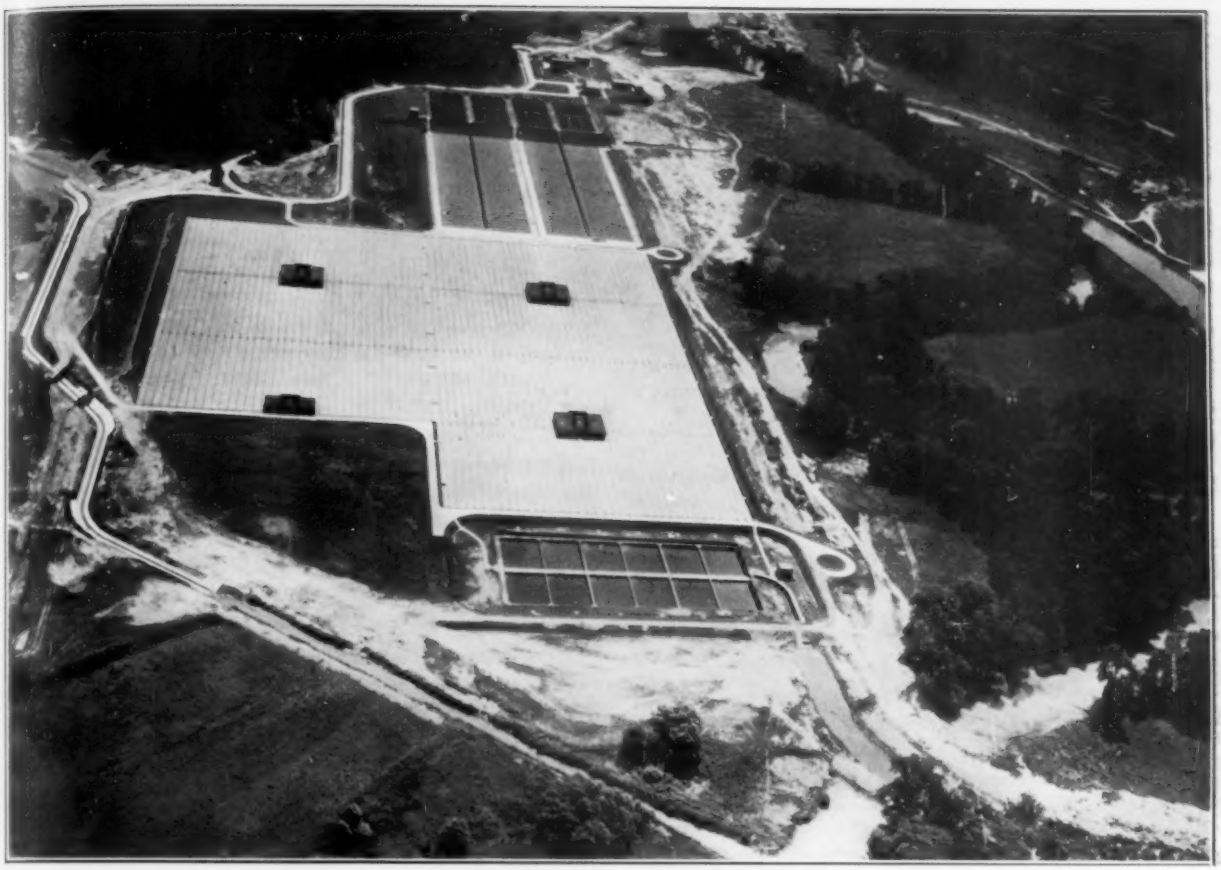
Rolling continues until the sawdust turns black. Then more sawdust is added, and the same procedure is repeated until the sawdust has absorbed all of the macadam binder that it is possible to absorb. The sawdust cushion surface is then completed.

On this sawdust cushion surface, the lines are painted for basket-ball, volley-ball, or tennis, a coating of shellac having previously been applied where the lines are to be painted. White zone marking paint is used.

We have found this surface very satisfactory. It is more resilient than any of the other hard surfaces. It is not abrasive and consequently it does not wear out the leather-covered balls as rapidly as other hard-surface courts. With the proper slope for drainage, this court sheds water quickly. The sun has little effect on the surface, although it does soften to the extent that high heels mark it up in hot weather.

We have constructed courts in Tampa according to the above specifications, using our own labor, for about 74 cents per square yard.

W. L. QUINLAN,
Superintendent of Public Recreation, Tampa, Fla.



AERIAL VIEW OF THE NEW SEWAGE TREATMENT PLANT OF AKRON, OHIO

The New Sewage Treatment Plant of Akron, Ohio, Reaches Capacity

By A. B. BACKHERMS
Sewerage Engineer,
Akron, Ohio

AKRON has been known for years as the largest rubber manufacturing center in the world, and is now becoming the center for the building of lighter-than-air crafts in the United States. The name of Akron signifies a "high place." It is located in Summit County, Ohio, on the divide which separates the Great Lakes and the Ohio River watersheds.

Population and Annexation

The phenomenal growth of Akron occurred in the decade between 1910 and 1920. To provide the required area to properly house the large influx, the corporate limits of the city were expanded in 1916 and frequent annexations have been made since.

The corporate area is 40.6 square miles. At present the City Council has under consideration a program which contemplates adding another 20 square miles, and has high hopes of merging Cuyahoga Falls and Barberton within the next five years, with a present population of 19,522 and 23,932 respectively. The population as revealed by the 1930 census credits the city with 256,398 persons, which exceeds the forecast of all municipal engineering departments and the utility companies as estimated in 1922, and this in view of the fact that, following the slump in 1921, the exodus from the city reduced the population by approximately 25,000. It has been reported by good authority that at least 8,000 people normally employed in Akron were away during the 1930 census count, because of the recent business depression.

From a housing standpoint, Akron is unique in that it is one of the few industrial cities in the United States that have no tenement district. Apartment houses are scattered and most residences are of the single-family type, with about 44.7 per cent owned by the occupants. With new developments spread over large areas, it makes it extremely difficult for the service departments and public utilities to keep pace with the growth and public demands. What normally appears to be a reasonable program in anticipation of future needs is eclipsed in a few years, as witnessed by the expansion program of the power and light, the telephone and the gas companies, the rubber industries, the banking institutions, and the overcrowding

of the schools, which necessitates, in some sections, a two-shift method of education.

The Sewerage System

The sewerage system was laid out in 1880 by O. H. Gardner. It is of the combined type and still serves what is now the commercial and retail business section of the city. As the town expanded, sanitary sewer extensions were made to the original combined system, and local storm drains were laid, which discharged into the nearest convenient ditch or stream. As a result of the tremendous growth between 1910 and 1920 and the dire need for sanitary and other municipal facilities, in 1918 the Service Department was reorganized and separate Bureaus of Highway, Sewerage and Water-Supply were created.

Very few records were available, as all the original data were destroyed when the City Hall was razed by an incendiary at the time of the riot in 1900, therefore an underground survey was started, leading to the preparation of a comprehensive plan of sewerage for the entire city, which contemplated relief sewers, new trunks, intercepters and outfall sewers. A large construction program followed and today the city has 340 miles of sanitary, intercepter and outfall, 80 miles of storm and 140 miles of combined sewers, a total of 560 miles.

The sewage from the area in the Cuyahoga River Valley flows to the treatment plant, and at present the sewage over the divide in the Kenmore District is discharged into the Tuscarawas River untreated. The separate sanitary sewers in a number of districts are frequently surcharged during storms on account of surreptitious downspout connections, and while surveys have been made at intervals to curb this abuse, they have not been entirely successful.

Sewage Treatment Plant History in Akron

Akron's first treatment plant, consisting of a bar rack, grit chambers, Imhoff tanks, trickling filters and sludge beds, was placed in service in 1916 and designed for an average flow of 15,000,000 gallons a day. It is located at the junction of the Cuyahoga and Little Cuyahoga Rivers, which, at the time it was planned, was far from the developed area and considered remote from the city. On account of lack of funds, the secondary settling tanks and half of the filters and sludge-drying beds were eliminated from the contract and never constructed. Obviously, the plant failed to produce the results anticipated.

In 1921, a survey and investigation was made under the direction of Metcalf and Eddy, consulting engineers, which showed the plant to be badly unbalanced as to units, and overloaded. Subsequently, the structural units were slightly modified and the works operated according to the recommendations of the consulting engineers, with about 6 million gallons per day treated through the plant and the remainder estimated at 15,000,000 gallons of raw sewage and industrial wastes, discharged directly into the river.

Under date of February 17, 1922, the State Board of Health issued a mandatory order to the city of Akron to eliminate the pollution of the Cuyahoga River and as a result Metcalf and Eddy were engaged to prepare a preliminary report. Preliminary studies in connection with the sewage treatment problem indicated the necessity for securing comprehensive data relative to the composition of the industrial wastes and the effect of these wastes upon the composition of the sewage from the entire city.

The city at that time being only partially sewered, it became necessary to obtain samples and make gagings at the old treatment plant as well as at each of the industries, and since the rubber-reclaiming plants were the only manufacturing concerns producing abnormal wastes, the survey was confined to that type of industry, of which there were three. These plants reclaim rubber from old tires and rubber goods of various kinds and from scraps from the manufacture of tires and other articles of rubber. Because of the disconnected condition of the sewerage system, it was impossible to obtain reliable flow figures, and none of the industrial concerns could furnish figures of the quantity of water used or discharged into the sewers; consequently, future sewage flow figures could not be estimated with any degree of accuracy and the character of the sewage was hypothetical.

In a report dated May 4, 1923, upon the "Relation of the Wastes from the Rubber-Reclaiming Industries to the Sewage Treatment Problem in Akron," the consulting engineers stated that the reclaiming plant wastes, if combined with the sewage from the entire city, would contribute such quantities of constituents, particularly suspended solids, as to make the combined sewage two to three times as strong as ordinary sewage. Under the caption "Reasonable Municipal Policy Relative to Treatment of Rubber-Reclaiming Plant Wastes" they further stated:

It appears desirable for the city to adopt a policy relative to the treatment of industrial wastes which is as liberal as may be consistent with the public interest.

It does not appear to be in the public interest for the city to allow the rubber-reclaiming plants to discharge the unsettled wastes into the municipal sewers for treatment with the sewage of the city.

The conditions are such that it seems to be consistent with the public interest for the city to provide for the treatment of settled reclaiming plant wastes, notwithstanding the fact that the city will incur substantial expense thereby.

In consideration of the obligation assumed by the city for the treatment of the settled wastes from the reclaiming plants, the city should require that the treatment of the unsettled wastes for the removal of suspended solids be carried out by the reclaiming plants under strict municipal supervision of operation, or actual municipal operation of the plants required for such treatment, and, in case of operation by the city, that the rubber-reclaiming plants reimburse the city for any expense incurred thereby.

Accordingly, the following recommendations were added:

That the rubber-reclaiming plant wastes be treated at the several reclaiming plants in such a manner as to provide for the practically complete removal of the suspended solids prior to the discharge of the wastes into the municipal sewers.

That the settled wastes from the rubber-reclaiming plants be discharged into the municipal sewers and treated with the sewage of the city.

That the city arrange with the rubber-reclaiming plants for the installation of wastes treatment plants which shall be capable of removing practically all of the suspended matter from said wastes and shall be satisfactory to the city.

That the city arrange with the rubber-reclaiming plants for the operation of said wastes treatment plants under strict municipal supervision, or for the actual municipal operation of said plants at the expense of the rubber-reclaiming plants.

That clean waste waters from industrial plants be discharged directly into the watercourses passing through the city, in all cases where it may be found practicable to do so, in order to prevent unnecessarily increasing the volume of sewage to be treated.

This policy, which is in harmony with existing ordinances, was adopted by the city of Akron and formed the basis for the design of the new plant.

New Sewage Treatment Works

The new plant is situated in the valley adjacent to the Little Cuyahoga River near Botzum, Ohio, about three miles north of the present corporate limits of the city, well isolated and far removed from any developed territory, on an 834-acre site owned by the city.

Construction was started in April, 1926, and practically completed and ready for service by the end of 1927. However, on account of litigation over the award of contracts, the construction of both sections of the 12 x 7½-foot outfall sewer, totaling 4.1 miles, was delayed, and consequently the plant was not placed in service until December 12, 1928.

The works, known as an Imhoff tank-trickling filter installation, consist of a bar rack, 2⅞-inch clear opening; two 55-foot diameter Dorr detritus tanks 15 feet deep with continuous removal of deposits; two grit chambers 3 feet x 50 feet long x 7 feet deep and two cylindrical Dorr screens 6 feet in diameter with 2-inch x ⅛-inch slots which handle 20 per cent of the concentrated liquid from the detritus tanks; an administration building which houses two 48 x 28-inch Simplex venturi meters, laboratory, locker, showers and washrooms; twenty-four 27.5 x 75 x 34.5-foot deep Imhoff tanks; sixty-eight 15 x 160-foot sludge-drying beds covering 4 acres; 14 acres of trickling filters 10 feet deep, and twelve 50 x 65 x 10-foot deep rectangular secondary settling or humus tanks, water and humus sludge pump-houses, garages and machine shop and storehouse. The total cost was $3,750,000 and includes all engineering charges and fees and $106,307 for land. It was designed to treat the sewage from a population of 260 as of 1935, with an average capacity of 33 m.g.d. and a maximum flow of 94.6 m.g.d.

Present Flow Through Treatment Plants

The daily average flow through the treatment plants since January 1, 1930, which is about the time when the open links in the intercepter system were closed and the industrial waste from the rubber-reclaiming plants was admitted to the treatment plants, was as follows:

Month	Plant No. 1 Botzum, O. M.G.D.	Plant No. 2 Old Plant M.G.D.	Total M.G.D.
January	39.0	3.5	42.5
February	33.8	4.1	37.9
March	35.3	6.9	42.2
April	37.9	4.8	42.7
May	31.4	6.3	37.7
Average	35.5	5.1	40.6

Comparable figures from the Water Department for the same five months, show the average daily consumption to be:

January	19.85 m.g.d.
February	20.05 "
March	19.68 "
April	19.50 "
May	20.89 "

The water is furnished to all industries and approximately 256,000 population with a daily consumption per capita of 45 gallons for domestic use only, and for domestic and industrial water approximately 85 gallons per capita. In addition, the industries use a tremendous volume of water for cooling and washing purposes which is obtained from wells, lakes, the canal and other private sources, a portion of which is returned to the streams and the rest discharged into the sewers.

It is evident that the city at present, together with certain areas in the county tributary to and connected with the city sewerage system, is producing a volume of sewage equal to and slightly in excess of the designed capacity of both plants. From aforementioned figures it can be seen that the daily sewage flow is practically twice the quantity of water pumped by the water department. The excess can be accounted for (1) by the flow from county sanitary districts tributary and connected to the city sewerage system; (2) infiltration; (3) storm water from downspouts connected to sanitary sewers; (4) clear water from industries discharged into sewers; and (5) by unregulated flows from intercepter connections from combined sewers.

The analysis of the sewage shows it to be substantially stronger than that for which the new plant was designed, resulting in the overloading of the units. At present there are four rubber-reclaiming plants, and a recent survey showed that the quantities of waste solids are greater than found in the 1923 survey, despite the fact that all have installed partial treatment equipment.

Table 1 shows the relation between the tonnages of constituents from the rubber-reclaiming plant wastes, and tonnages received at both treatment plants. It will be noted that of the 318.4 tons of total solids received at the plants, 77 tons, or 24.2 per cent, were contributed by the four reclaiming plants daily. In comparing the total suspended solids and oxygen consumed, it will be noted that 44.5 per cent and 80.6 per cent respectively of the tonnages received at both plants are produced and contributed by the industries.

TABLE 1

RELATION BETWEEN TONNAGES OF CONSTITUENTS FROM THE RECLAIMING PLANT WASTES AND TONNAGES RECEIVED AT BOTH TREATMENT PLANTS

Analysis	Tons Received at at Both Plants per 24 Hours	Tons Contributed by 4 Reclaiming Plants per 24 Hours	Per Cent of the Tonnage Received at Sewage Plants Contributed by Reclaiming Plant
Total solids	318.40	77.00	24.2
Total volatile solids	114.90	50.30	43.8
Total dissolved solids	262.90	52.30	19.9
Total suspended solids	55.50	24.70	44.5
Total settling solids	37.50	22.60	60.3
Total oxygen consumed	30.40	24.50	80.6
Total organic nitrogen	3.03	0.33	10.9
Ammonia nitrogen	1.39	0.05	3.6
Total alkalinity	27.50	16.40	59.6
Chlorides	102.90	0.99	1.0

NOTE.—Plant analyses for January through April, 1930.

It is significant that the 24.7 tons of suspended solids is carried by a daily flow of 1,300,000 gallons of industrial wastes, whereas the rest of the flow, or 40 m.g.d., carries only 30.8 tons, which clearly points out the concentrated nature of the industrial waste.

Immediate Action Necessary

The quantity of suspended solids from the industries is such that they cannot be handled in the plant units of the aggregate size of those installed by the city. It is the consensus of opinion of all familiar with the local problem that the suspended solids should be removed from these wastes at the source and not be introduced into the municipal sewage.

The companies have all agreed to cooperate, and at a recent meeting promised to install additional equipment and be ready for check analysis within two months. As a temporary expedient and pending the reduction of solids by pre-treatment at the reclaiming plants, the excess sludge

from the Imhoff tanks and all the sludge from the humus tanks will be lagooned in the old abandoned river channel adjacent to the new plant.

In addition to the work at the rubber-reclaiming plants, a survey of all the industries will be undertaken to solicit their cooperation in reducing the quantity of clear liquids being discharged into the sewers.

Conclusions

Nothwithstanding the fact that the flow through the new plant is slightly in excess of the designed capacity, and the amount of suspended solids in the raw sewage is almost twice that assumed in the hypothetical sewage for which provisions were made, the effluent obtained and the removal of solids effected indicate that the plant is functioning in admirable fashion despite the overload. There is a marked absence of foaming in the Imhoff tanks, and the slight signs of surface pooling on the filters, which occurred last fall, have entirely disappeared following the customary spring unloading.

The average analytical results for May showed a 60.2 per cent reduction of suspended solids for the Imhoff tanks and 75.8 per cent for the entire plant. The average figures for the effluent from the plant for that month and during the unloading period showed 90 p.p.m. suspended solids; nitrite and nitrate nitrogen, 0.36 and 1.80 p.p.m. respectively; oxygen consumed, 30-minute digestion, 58 p.p.m.; dissolved oxygen 5.1 p.p.m.; biological oxygen demand, 5 days, 20° C., 12.0 p.p.m. with a relative stability of 66 per cent.

The subsequent analytical analyses on the daily composite samples for the week of June 9 showed an over-all efficiency of 92.8 per cent with an effluent containing 32 p.p.pm. suspended solids; nitrite and nitrate nitrogen, 0.73 and 9.27 p.p.m., respectively; oxygen consumed, 63 p.p.m.; dissolved oxygen, 7.2 p.p.m.; B.O.D. 20 p.p.m. with a relative stability of 90 per cent.

Program

The writer manifestly hopes to interest the City Council and obtain an appropriation so that the initial experimental work can be started and further data procured for determining the type of extensions in anticipation of the ultimate expansion of the plant, to be completed and ready for service not later than 1935. This will require twelve to eighteen months of intensive study and investigation, one and a half years for the design, and two years for the actual construction. Obviously, with the excessive flow and quantity of suspended solids and the large annexation program contemplated, no time can be lost.

Plans for the new plant were prepared by city forces in the Bureau of Sewerage under former Service Director W. F. Peters; directed by J. E. Root, sewerage engineer, and R. A. Allton, designing engineer. The Walsh Construction Co. were the general contractors, with the writer in charge as resident engineer. Operation and maintenance are supervised by T. C. Schaetzle, engineering-chemist. Metcalf and Eddy were consultants on design and construction and were retained for a period of one year on operation. F. E. Swineford is the present Service Director and the writer is sewerage engineer.

A Municipality's Right to Exclude Cemeteries

By **ARTHUR L. H. STREET**

CAN a city validly forbid the establishment of new cemeteries within its limits, assuming that the prohibition does not run counter to charter or statutory provisions? According to the decisions of appellate courts in different states, the validity of such a prohibition depends upon its reasonableness, considering conditions in the particular municipality. An ordinance forbidding the establishment of new cemeteries, or burials in existing cemeteries, might be held to be constitutional in a compactly built-up city like San Francisco, and yet an ordinance of identical wording might be declared by the same court to be void, as applied to a city with outlying sparsely settled sections, dare I say, like Los Angeles.

Principles Summarized

That cities may be empowered by the state to regulate the burial of the dead is a proposition that has been frequently restated by the courts. (See 11 Corpus Juris, 51.) But it is equally well-settled that the power must not be exercised arbitrarily or unreasonably. (See *Laurel Hill Cemetery v. San Francisco*, 152 California Supreme Court Reports, 464.)

Cited decisions support the following summary of principles stated by a standard legal authority:

"The power when thus possessed is a continuing power which may be exercised by the municipality from time to time as the public health and welfare may require, and it may prohibit future burials in existing cemeteries or the establishment of new cemeteries within specified portions of their corporate limits, or prevent the extension or enlargement of cemeteries already existing. But circumstances may be such as would make it unreasonable, even in a city, absolutely to prohibit burials anywhere within the city limits." (11 Corpus Juris, 52.)

In one of the latest decisions on this subject (*German Evangelical Protestant Congregation v. Schreiber*, 209 S. W. 914), the Missouri Supreme Court recognized "the general rule that a reasonable ordinance of a municipal body prohibiting further interments in a cemetery within its limits is within the power of that body, and must be obeyed."

Since motor vehicles enable convenient interments at greater distances from city centers than was possible when horse-drawn vehicles and poorer roads were necessarily used, the reasons for forbidding the establishment of cemeteries within city limits are ordinarily increased, particularly when those limits have not been unduly extended.

Exclusion Under Zoning Ordinances

No court decision affecting the right of municipalities to exclude cemeteries under zoning ordinances has come to the attention of the writer. In the case of *City of Wichita v. Schwertner*, 286 Pac. 266, decided April 5, 1930, the Kansas Supreme Court decided that a Wichita zoning ordinance did not restrict continued use of existing cemeteries in a residential district. Hence, lands held for future burial purposes were declared to be subject to valuation for such purposes in assessing damages in a street-widening proceeding. But the decision proceeds purely upon a theory of what the particular ordinance intended to do, rather than what it might have done.

Whether a given zoning ordinance operates to forbid establishment of a cemetery within city limits, where there is no express prohibition, depends, of course, upon an interpretation of the precise language of the particular ordinance. There may or may not be an implied prohibition by reason of what is expressly permitted, depending upon what is a fair construction of language used.

The New Water-Supply Development at Griffin, Georgia

By R. G. HICKLIN, Assoc. M. Am. Soc. C.E.
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Robert and Company, Atlanta, Ga.

THE former water-supply of Griffin, Ga., was obtained from a number of small-diameter deep wells, located in a granite formation where small capacity was obtained. As the town grew, this source of supply became inadequate, and it was necessary to consider a surface water-supply.

In 1921 the City Commissioners engaged engineers to make a study and recommendations as to where the city should obtain an additional water-supply. A thorough investigation was made both of the existing deep-well supply and of all surface streams within a reasonable distance of Griffin. A study of the data showed that the only adequate supply was the Flint River, a small river located about nine miles west of Griffin. It was decided that the city should abandon its existing deep wells and obtain water from this stream.

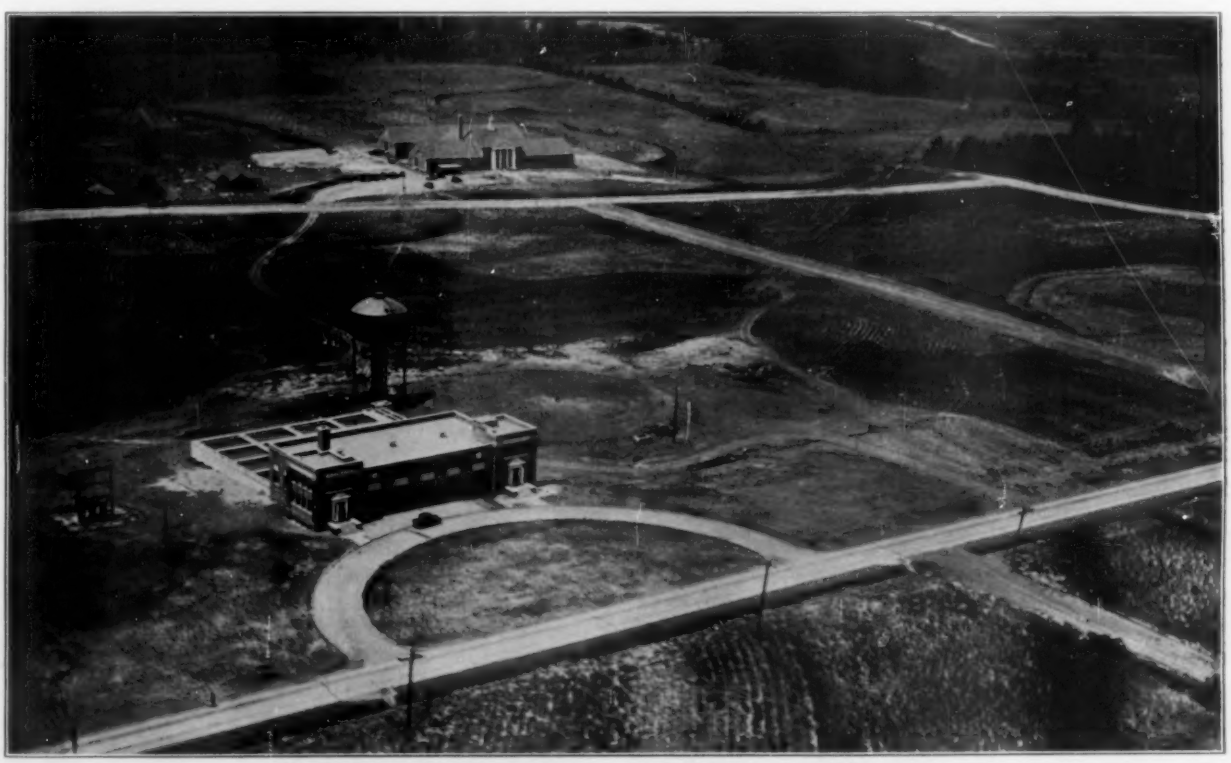
Although the additional water was needed at the time the report was made in 1921, on account of the difficulties of raising funds for the project actual construction was not started until the fall of 1929. The project was completed and placed in operation in June, 1930.

The Raw-Water Pumping-Station

The raw water is obtained from the Flint River at a point about nine miles west of Griffin. The river intake is of concrete, located about ten feet out in the stream and provided with gates to take the water from different levels. Bar screens are provided to exclude driftwood, etc., and the intake is connected to the screen chamber with a 24-inch cast iron main.

The screen chamber is located about 20 feet from the river bank and 20 feet from the end of the pump-house. It is 13 by 10 feet in size, built of concrete and provided with duplicate screens which are removed by a chain hoist for cleaning and inspection. Shut-off valves are provided for both the river intake and the pump suction line.

The pump-house is of brick with a concrete roof, is 53 by 19 feet in size, and houses one 2-m.g.d., one 3-m.g.d. and one 4-m.g.d. horizontal type centrifugal pumps. All pumps are operated by synchronous motors with power obtained from the city power system. The transmission line from the city system to the river is owned by the city. A 24-inch suction main extends from the screen chamber under the pump-house, and each pump suction is connected directly into this main. Pumps are primed by individual ejectors and equipped with individual suction and discharge gages. An air cushion chamber is provided on the discharge header and also a venturi type meter. The pumping pressure ranges from 245 to 315 feet total head. Because the river at this location has only a variation of ten feet between maximum high and minimum low water, no special precautions are necessary to protect against



AERIAL VIEW OF THE GRIFFIN, GA., WATER-WORKS FILTRATION PLANT

high-river stages, so the pumps take their suction directly from the river level.

The raw-water main from the pumping-station to the filtration plant is of 20-inch centrifugally cast pipe, 7.8 miles in length, and is equipped with the usual air relief, blow-off and main line shut-off valves.

Filtration Plant

The filtration plant is located about 1.5 miles from the center of town, which is about one-half mile from the city limits. The plant is of 4-m.g.d. capacity and arranged so as to permit doubling this capacity.

The mixing chambers are in duplicate, each being of 2-m.g.d. capacity. They are of concrete, 98 x 8 x 16 feet deep, of the over and under type, with the intermediate baffles of cypress. Cross-connected at each end and provided with sluice-valves, they may be regulated and operated either separately or together. The raw water enters the mixing chamber through a venturi type meter, and flow is regulated by a float-controlled hydraulically operated valve. Chemicals are measured by dry feeders, and provision is made to introduce the chemicals into the mixing chambers either at the inlet end or at the one-quarters or the one-half point.

Separate coagulating basins are provided for each filter unit. These are of concrete, 80 x 23 x 12 feet deep, which gives a four-hour detention period. Inlet water from the mixing chamber is controlled by a valve. The basins are of the straight-flow type and provided with a stilling wall with 4-inch diameter openings at the inlet end and with a take-off weir at the outlet end. The take-off weirs are cross-connected and provided with shut-off gates, so that water from the other basins may be used while a basin is drained for cleaning or repairs.

Filters are of the gravity type, 23 feet by 18 feet by 8 feet deep, with 20 x 18-foot filter area. They are designed for a 2-g.p.m. per square foot of filter area, or 1-m.g.d. for each of the four units. Manifolds are of cast iron, entering the units through the bottom at the center of the unit and connecting to a manifold running crosswise of the unit, to which are connected the 2-inch laterals spaced 6 inches on centers. The filter effluent piping to the clear well is placed in a trench below the pipe gallery and pump-room floor together with the wash-water line, filter-drain line, etc. All filter valves are hydraulically operated and controlled from piano-type operating tables. Sample pumps for drawing both filter effluent and influent are mounted on each table, and pumps for drawing composite samples of raw water, filtered water, and chlorinated water are located on a separate table centrally located. Each filter unit is equipped with a rate controller and indicating and recording rate-of-flow and loss-of-head gages.

Wash water is provided from a 75,000-gallon steel tank on a 40-foot tower located adjacent to the filter building. The wash-water rate controller is provided with manual adjustments located on the operating floor to control the rate of wash and is also provided with a shut-off device to automatically close the controller valve at the end of the wash. A venturi type of meter is provided for measuring the amount of wash water used.

The service pumps are one 2-m.g.d., one 3-m.g.d. and one 4-m.g.d. synchronous motor-driven, centrifugal units. A gasoline engine-driven pump of 3.6-m.g.d. is provided for emergency use. The suctions are taken from a 24-inch header main which is connected directly to the clear well and located in a trench under the pump-room floor. The pump discharge header main is in this same trench. The pumps are primed by individual ejectors and equipped with suction and discharge gages mounted on a centrally located panel, together with an indicating and recording master pressure gage. A venturi-type meter is provided for measuring the water delivered into the distribution system. The pumping pressure ranges from 200 to 225 feet.

The chlorinators are installed in duplicate and located on the operating floor. The chlorine is introduced into the filter effluent before it enters the clear well. Provision is also made to introduce a secondary lime dose into the filter effluent.

The filtered-water storage consists of a 1,500,000-gallon clear well at the filter plant, a 300,000-gallon steel tank on a 101-foot tower, and the old steel elevated tank of 269,000 gallons capacity. The clear well at the filter plant is of concrete, 135 feet diameter by 14 feet deep, with a concrete cover, and is entirely underground. The 300,000-gallon elevated steel tank is of conventional design and is located about half-way between the plant and the center of town and on the same level as the old tank. The old elevated tank is at the opposite side of town at the edge of the business district.

There is a 20-inch main from the filtration plant to the 300,000-gallon tank, an 18-inch pipe laid for half the remaining distance, then a 16-inch main on to the center of town. This main is tied into the distribution system at intervals of one to two blocks.

All Parts of Plant Metered

Practically all lines are metered so that accurate records may be kept. The raw water is metered both at the river and at its discharge into the mixing chambers so as to determine line losses. Each filter unit is equipped with recording gages to determine the output of each filter, and the force main to town is metered to determine the amount of water delivered into the distribution system. Service lines to the toilets, lavatories, showers, boiler-room, laboratory, etc., are metered separately, and each service tap in town is also metered. The amount of wash water used is also metered and recorded both as to amount and rate. All electric current is metered. Both raw-water and clear-water pumps are metered separately, and the miscellaneous current used is metered separately for lighting, dry feeder motors, laboratory, etc. With this arrangement of meters, thorough and accurate cost records may be kept, both as to total cost and as to cost of various operations.

The Filter Building

The entire project is modern in every respect and of first-quality materials and equipment. The dimensions of the filter building are 56 by 112 feet. The exterior is of dark-red, rough-texture face brick with terra cotta trim, and the interior is common brick painted. Entrances, laboratory, offices, etc., are plastered. Entrances are provided at the front at each end of the building at street level. The entrances lead to the operating-floor balcony, which overlooks the pump-room below. At the south end of the building are the boiler-room and showers, toilets, etc., opening on the pump-room floor level, the laboratory opening on the operating floor, and above is an office and storage room. At the north end of the building there is the meter-room and a storage-room opening on the pump

SCENES AT THE GRIFFIN WATER-WORKS

1. The river pumping-station, with the intake and screen chamber at the left. 2. Interior of the river pumping-station, showing the raw-water pumps and switchboard. 3. Front view of the filtration plant, showing the mixing chamber and wash-water tank on the right. The earth fill over the clear well may be seen in front of the wash-water tank. 4. Rear of the filtration plant, showing the mixing chamber and coagulating basins. The raw-water control chamber is shown in the lower left-hand corner, and the 300,000-gallon elevated tank in the background. 5. The operating floor and filter piping on the pump-room floor. The control for the variable wash-water rate controller is shown on the operating floor near the center. 6. The service pumps with the switchboard at the right and the gage board at the left. Note the overhead trolley and chain hoist for handling pumps and motors

room, the dry-feeder room opening on the operating floor, and above is the alum- and lime-storage room. An elevator serves all floors in the north end. The floors are of red tile, and the plant is equipped with steam heat, hot and cold water to the lavatories and showers, etc. The laboratory has complete chemical and bacteriological equipment.

Financing

The total cost of the work was $425,000, which included land, engineering, cost, etc. The engineers were Robert and Company, Incorporated, of Atlanta; the general contractors were The McClelland Company, of Charlotte; and the pipe line contractors were the Hornbuckle Contracting Company, of Atlanta. Filter equipment was furnished and erected by E. W. Bacharach and Company, of Kansas City, and the pumps, motors and electrical work by Burford, Hall and Smith, of Atlanta.

One of the unusual features of the financing was the fact that it was only necessary to issue $184,000 in bonds for the project. The balance of $241,000 was already on hand, having been accumulated from the profits of the Water and Light Department during the past few years.

Progress in Standardization of Highway Purchases

By **W. A. VAN DUZER**
Assistant Chief Engineer, Pennsylvania Department of Highways; and President, American Road Builders' Association

IF the specifications covering supplies, material and equipment used by the different highway authorities could be standardized, the benefits derived would more than recompense the effort and expense necessary to bring about such standardization. It is obvious that the large majority of purchases, especially in the equipment line, cannot be completely standardized; nor would it be advantageous to carry standardization too far, and thus retard improvement in designs.

The Benefits of Standardization

No one would care to make the statement that any particular design offers no opportunities for improvement. There are many items which, however, we believe could be standardized with much benefit. Among the benefits would be the following:

1. The manufacturers, knowing that the different states and counties would require materials covered by the same specifications, could manufacture such materials throughout the year, stocking them during the dull seasons. This would have a tendency to stabilize industry and would permit a more economic production, which should be reflected in the purchase price.

2. If materials were standardized, deliveries could be made promptly and costly delays would be avoided.

3. In case of emergencies, the highway departments would be able to obtain material meeting their specifications and requirements. At present it is often impractical to wait until such materials can be obtained, and consequently substitute and often inferior materials are accepted in order that the work may not be delayed.

Some Specific Examples

By promulgating standard specifications, better materials and equipment can be obtained. As an example of this we would cite the 10-gallon caretaker's heating kettles as they were sold by the leading supply houses four or five years ago. These kettles were made of light-gage sheet steel which was too thin to lend itself to welding. Consequently, the spouts and seams were riveted and almost invariably leaked when new. In addition to this, the kettles were so light that a rough handling soon had them out of shape and unserviceable. About four years ago we drew up specifications increasing the gage of the metal and specifying that all joints should be welded. Practically all the manufacturers adopted these specifications and now the heavier kettles can be purchased from any of the supply houses handling this class of equipment.

Standard specifications have also been of benefit on road drags. For years we purchased road drags on competitive bids. Different manufacturers emphasized special good points about their particular drags. Two years ago we went into this matter carefully and made a drawing of a standard road drag. In doing this we embodied the really worth-while points in all the drags, adding weight and strength where required. We submitted these drawings to the different manufacturers of drags and obtained competitive prices. The drags we purchased cost very little more than we had been paying for an inferior product and not only gave us a very efficient drag but also made all parts interchangeable. As soon as the entire state is equipped with these drags, confusion relative to the purchase of drag blades and repair parts will be a thing of the past.

This brings up the point of cutting-edges for graders. A survey about two years ago showed that while we had graders with four different lengths of blades, it required 54 different cutting-edges to supply our needs. This was due to the different shapes and different punchings furnished by the various manufacturers of road graders. About that time we adopted the standard recommended by the Standardization Committee of the Mississippi Valley Association of State Highway Departments. Now all graders purchased are equipped with mound boards punched to take these cutting-edges. As soon as our old machines are worn out, the purchase of cutting-edges for graders will be simplified.

Other Possibilities

Another class of equipment that lends itself well to standardization is snow-fence. At present, practically the only difference in the specifications of different states covering snow-fence is that some of the states specify No. 12½ wire while others specify No. 12. There is also a slight difference in the test of the galvanizing on this wire. Consequently, snow-fence manufacturers, of whom there

are only five or six in the country, are unable to manufacture fence for the different departments until they have been definitely awarded the contracts. This often leads to delays in furnishing the equipment. We minimize the delays by advertising early in the year, usually in June. However, if the different states had the same specifications, we are quite sure that we should obtain better prices and prompter deliveries, and that the manufacturers would be better satisfied.

This also might apply to corrugated pipe. At present, pipe manufactured to the specifications of some states will not be accepted by Pennsylvania on account of the specifications relative to riveting and width of the lap. When we require pipe on short notice, we are often compelled to wait until such pipe can be fabricated, while if the specifications of the different states were standardized, such pipe could be shipped directly from stock.

The specifications covering crushed stone as promulgated by the different states give a good example of wasted effort and money on the part of the stone producers. For instance, producers who are shipping interstate business and have orders for two or more states must change their screens in order to meet the grading requirements of the different states. They do not dare to stock a large quantity of stone for fear they will not be able to dispose of it. Very few of the stone producers have space to stock the different sizes as required by different states.

We see no reason why specifications covering bituminous materials for surface treatment, penetration, etc., cannot be standardized, and there is every reason to believe that if they were, the highway departments and the producers of such materials would be mutually benefited.

The same applies to paints used especially for highway purposes, such as traffic paint, guard-rail paint, sign paint, etc.

In the higher class of equipment, such as trucks, standardization is rather a difficult problem to solve. We have standardized on dumping-equipment for manually operated dump-bodies, the principal idea being to obtain a dump-body that will be safe in operation—one that cannot run down and injure the operator by flying crank or wheel. Three years ago when we insisted on this type of equipment, there was only one manufacturer who produced a dumping arrangement that met our specifications. Today, however, there are at least four that comply with our specifications regarding safety.

On various other items of equipment complete standardization is impracticable. It is our practice to draw specifications for such equipment sufficiently tight to exclude equipment that we know is not suited for our purpose, and sufficiently open to accept all other equipment. This, we believe, should be the purpose of all specifications. To date, there has been very little concerted effort on the part of the different highway departments to attempt standardization or to cooperate or coordinate in the promulgation of specifications.

Cooperation Will Bring Standardization

We believe that if the testing divisions, the equipment divisions, and the purchasing divisions of the different states would give this matter careful and serious consideration, much benefit would result. At first, it might be opposed by the manufacturers, but we believe that if the matter was properly handled, their objections could be overcome by the potential benefits to be derived by them through such standardization.

The American Road Builders' Association, recognizing the benefits to be derived from standardization of purchase and standardization of equipment models, appointed a committee about two years ago to work in conjunction with a similar committee appointed by the Associated General Contractors of America to prepare a depreciation schedule on equipment. This committee made a progress report at the annual meeting of the American Road Builders' Association in 1929, showing the rates of depreciation on practically all kinds of equipment used in highway construction. The final report was made at the Atlantic City meeting of the Association last January, and these schedules are now available.

The American Association of State Highway Officials and the American Road Builders' Association appointed a joint committee, of which the writer was Chairman, to work out a method of standardization of purchase. A report was made last year, and the committee will continue during the coming season.

There was also appointed a joint committee of the American Association of State Highway Officials and the American Road Builders' Association to standardize the construction of weighing-devices for fine and coarse aggregates for concrete, which has been adopted as standard by the two Associations.

It is proposed to continue these studies during the next year and to make recommendations which will help the equipment manufacturers as well as the road authorities in determining set standards for each piece of equipment used in highway construction.

Roadside Stands to Display State Approval Insignia

OFFICIAL approval of the state of Massachusetts will hereafter be extended to roadside stands that are neat and attractive in appearance and that handle fresh, local products of good quality. Such approval is to be evidenced by signs issued on one-year lease terms by the State Department of Agriculture and subject to withdrawal without notice when the terms of the lease are broken by the lessee.

A number of the better-class roadside stands have for some time handled certain products that have been inspected by the State Department of Agriculture and labeled as New England quality products. Owners of these stands want to go farther and carry this label enlarged and in the form of a sign over their stands. After careful consideration, the Department of Agriculture has decided to grant this right and to provide the signs under conditions which are fully specified in a set of regulations just made available.

One of the provisions is that at least two of the products regularly sold at the stand displaying the sign shall be qualified to bear the New England quality products label. Products sold are required to be from the farm of the owner of the stand, or from neighboring farms; and no stand handling products bought in the city and trucked out shall be eligible to display a sign. Over twenty applications for the signs were received promptly upon the announcements of the state's intentions and several weeks before the proposed delivery.

The Prosecutor's View of Traffic-Law Enforcement

By ALEXANDER K. GAGE
Assistant Prosecuting Attorney,
Wayne County, Detroit, Mich.

WHY is there such difficulty in securing just punishment for the guilty in traffic cases? What is the cause of the oft-heard complaint that there is an absence of even-handed justice? What are the remedies, if any, for the resulting situation? Is our present system of laws inadequate to cope with the solution of this great modern problem?

In answering these questions, I may be pardoned if I refer to an experience of nearly five years in the office of the Prosecuting Attorney of Wayne County, at Detroit, during which time I have had charge of the investigations in approximately 3,000 major traffic cases and have assisted in preparing and trying at least a thousand cases.

The Testimony

Let us commence our inquiry by a close examination of the final act in the dreadful drama of motor mania. Court's in session! The case is called. The jury's impaneled. Most of the jurors are themselves drivers. They're pedestrians, too, but the "automobile in its short existence has proved itself to be the most useful instrument ever placed in the hand of man," as Judge Alva A. Corlett has said.

The people present their case. A long list of witnesses testify to the various elements contained in the charge: the fact of the victim's death; the injuries which caused death; the identity of the deceased; the time, the place, the physical conditions involved at the time and place; what the accused was doing; what the deceased was doing; the resulting catastrophe. Much of this testimony is routine and entirely lacking in dramatic appeal. Most of the testimony is fragmentary and unsatisfactory because of poor observation or lack of skill in the telling.

Oftentimes, important witnesses fail to appear, having lost heart and doubting their importance because of previous attendance at investigations, inquests, examinations, and at frequent adjournments. They have lost interest, have grown weary because of lost and unrecompensed time away from work or business. They resent the truculence and hostile attitude of defense counsel and the implications of prejudice, stupidity and bias and even dishonesty often imputed to them. They have moved, they're gone, not there.

Case is closed. Arguments of counsel. The judge's charge: presumption of innocence, reasonable doubt; unlawful act or the violation of some statute; intent (whether required or not—whether implied or not); the weight of evidence; interest, bias, ability and capacity to observe on the part of witnesses; and, again, reasonable doubt and presumption of innocence. The jury retires. The evidence is considered. The "intangibles" are also considered. The verdict.

I yield to none in my adherence to the belief "that the average American jury, when properly made aware of the seriousness of its task, is intelligent, conscientious, fair-minded, and frequently amazingly able to comprehend complicated situations of fact and pass upon them. Corruption in juries is a rare and uncommon thing, and, because of the rule of law that verdicts must be unanimous, exceedingly difficult of successful accomplishment." (Victor House, in *Atlantic Monthly*, August, 1928.)

Why So Often "Not Guilty"?

Yet, how can it be that, with the facts practically undisputed, our juries so often bring in a verdict of "not guilty"? Is it the "intangibles"? Is it sympathy for the driver or his family—are the members of the jury totally devoid of sympathy for the victim and his dear ones? Is it unwillingness to credit defendant with any intention to do wrong? Is it a strange insistence upon the fundamental principles that an act and an evil intent must combine to produce a crime; that no amount of intent alone or of act alone, is sufficient; that the two must combine; that the act and intent must concur in point of time; that the evil intent must be fairly deducible from the facts and proofs? These rules are elemental and have subsisted as long as the jury system itself. Are these tests applied to the evidence in the case during the jury's quest for a "reasonable doubt," so insisted upon by defense and carefully (sometimes, it would seem, over-carefully) stated by the Judge?

It is true that the Court may have fully charged the jury as to whether or not it is necessary to prove intent; and also (where gross negligence is charged) as to the degree of negligence which may take the place of intent. But does this careful safeguarding of the people's case overthrow the intangible influence of these fundamental principles which are ingrained in every freeman's breast and which are so skillfully set in vibration by the oft-repeated reference to conviction "beyond a reasonable doubt"?

"The automobile is more destructive of life and limb than all the instruments of war," says Judge Corlett again. "Our automobile casualties in 1917 and 1918 were 427,000 and American casualties in the World War in the same period were 317,387."

Considering these staggering figures, is not this "presumption of innocence" when applied to a reckless, heedless and careless driver of a ton or more of inert, insensate metal at a speed and in a manner which does not indicate the slightest regard for the safety and lives of all who are on or upon it, around or about it; is not this "presumption of innocence" a presumption indeed? And yet *there* it is—in the quiet, orderly courtroom with all the strange and imposing authority of the law arrayed against this sobered and seriously impressed respondent, whose appearance and manner are so completely altered since his late devastating experience. Is not this presumption likely to assume a deciding, if intangible, importance in the verdict of the jury?

The Hazards Should Be Fully Realized

Our juries are cross-sections of the current lives and thought of the great mass of our people. Their verdicts reflect the thought and spirit of the day. We must not be impatient with their findings; we must seek to truly interpret this thought and the correct rule of life to our juries. There is one point (and one point only), it seems to me, which must be carried, in order to secure this correct interpretation of the true thought and sound spirit of the day.

And that point is this: An automobile is a "dangerous instrumentality" and, when recklessly and heedlessly employed, it is just as deadly as a gun or knife or any other instrument of destruction.

Are the multiplicity of highway hazards known and charted? A more definite and widespread public knowledge of the effects of alcohol used in quantities much less than will result in obvious intoxication but which often tend to decrease motor control and appreciably lessen the sense of individual responsibility must be proven and admitted. One drink may be enough to make a driver take a chance. Even small amounts of alcohol, quite insufficient to intoxicate, tend to decrease the higher forms of skill and perhaps also to lessen the sense of individual responsibility. Do our people understand that "most accidents result from a combination of causes rather than from a single cause"; that, in most serious and fatal accidents, speed is either a primary or secondary cause; that very few of the 30,000 annual deaths from street or highway casualties are, strictly speaking, unavoidable?

Many casualties might have been avoided were the hazards known or fully appreciated. Disregarding these hazards, either because of ignorance or heedlessness, a casualty becomes imminent, no longer preventable. In the abstract, all casualties may be avoided; most can be prevented by the exercise of care and diligence coupled with knowledge of the hazards of the highway and a deep and abiding sense of individual responsibility. When the public at large is willing to subscribe to these proven facts, a cross-section of that public as found upon our juries will reflect their convictions in their verdict.

Upwards of two years ago, I suggested to a number of leaders in our great motor-car industry a modification of the plan just now being considered by this committee: a foundation to supply funds and to direct the proper placing of financial responsibility in cases where innocent victims of traffic casualties might be unable to bear the cost and burden of "the law's delay." The administration of such a foundation might be limited to a certain jurisdiction as a sort of laboratory experiment until such time as the state or even some national association might take over the enterprise.

This suggestion was offered as a practical method of meeting that certain resentment, which, it is believed, is not unlikely to express itself in three already often discussed programs of legislation for:

1. Mechanical speed control.
2. Drastic license laws limiting very greatly the number of drivers.
3. Compulsory liability insurance or some approved assurance of the financial responsibility of drivers.

The greatest result likely to flow from the success of such a plan or suggestion would be that the excuse for any lack of law enforcement—with even-handed justice to all—would be forever lost. The economic status of the victim or of the accused would no longer interfere with swift, certain and adequate punishment and the consequent universal respect for the law.

ACKNOWLEDGMENT.—The foregoing article is a digest of a paper presented at the National Safety Congress and Exposition, held at Pittsburgh, September 29-October 3.

Public Officers and Official Investigations

By **JOSEPH McGOLDRICK**
Department of Public Law, Columbia University and Member of the New York Bar

THE ancient constitutional and common-law guarantee against self-incrimination and double jeopardy have played so serious a part in blocking the investigation of current scandals in New York City that Governor Roosevelt has pledged himself to require their waiver by public officers. This is no new problem. In the scandals which beset the Harding administration, Secretary Fall, Attorney-General Daugherty and Alien Property Custodian Miller used this comforting cloak. At the same time, the New York milk graft inquiry and others involving the state census, school buildings, hospitals and sewers were thwarted in whole or in part by this obstacle. To these are now added the current year's bumper crop of scandals in New York, in which refusals to testify have played a prominent part. The inconclusive character of some of these inquiries and the complete frustration of several is attributable in large degree to this outworn constitutional privilege.

The late Chief Justice Taft put the case forcibly. Advocating modification of the privilege against self-incrimination, at the Yale Law School commencement in 1905, he said:

"If the administration of criminal law is for the purpose of convicting those who are guilty of crime, then it seems natural to follow, in such a process, the methods that obtain in ordinary life. If anything has happened and it is important to discover who is the author of it, the first impulse of the human mind is to inquire of the person suspected, whether he did it and cross-examine him as to the circumstances. Certainly this is the domestic rule by which your wife or your mother proceeds to find out who it is that broke the window, who it is that stole the jam from the pantry, or why it is that the sweeping has not been done by the person charged with that duty. She goes to the suspected culprit and asks the questions natural under the circumstances, to see whether her suspicion of guilt is well founded."

The Right to Examine Public Officers

The situation as regards public officers is peculiar in two respects. In the first place most of the illegalities in which they become entangled may be grouped under what is generally known as "graft"; that is to say, they involve a concerted effort, directly or indirectly, to rob the public or evade some law. The persons who know most about it are all participants, or as the law would say, co-conspirators. The second aspect that places public officers in special category is the fact that they are vested with a public trust. In the investigation of irregularities in the conduct of these offices, they are the very persons on whom

we have a right to rely for aid in uncovering malfeasance and misfeasance. The inquiries are never solely punitive in their purpose.

In the case of public officers, the immunity privilege goes beyond merely ruling out important evidence; it prevents us from going directly to those best qualified to give the testimony which will determine the truth. The result is that frequently prosecuting officers do not prosecute, thinking the attempt hopeless for want of evidence. When they do prosecute, they frequently fail for this very reason.

Two Doctrines of Immunity

The newest city investigations have involved two quite dissimilar protections. One is that no man may be required to testify against himself—or to put it more technically, give testimony which would tend to degrade or incriminate him. To avail oneself of this protection, one impliedly admits the commission of some crime or degrading act. In other words, he halts the inqury by virtually saying: "I have committed a crime. I will not tell you how I ran my office because, having committed a crime, I am excused from doing so."

The other immunity arises in connection with grand jury proceedings. The double-jeopardy clause of the Federal and most of our state constitutions which provide that no person shall "be twice put in jeopardy of life or limb" for the same offense, has been held to forbid the later use in a trial of a witness's testimony before the grand jury. Absurd as this reasoning is, it is a well-intrenched proposition of law. These are quite unrelated doctrines except that they have their origins in a misty medieval antiquity when the jury was emerging from trial by combat or torment. It would be hard to assign sound and logical reasons for their perpetuation today.

The Proposed Bill

There has been a tendency on the part of the press and even of the Governor to confuse these doctrines. Short of a constitutional amendment, it is difficult to see how this established judicial interpretation of the double-jeopardy clause could be altered, and there has been no proposal that this be undertaken. What Governor Roosevelt doubtless intended to give his indorsement to was a bill which the Citizens Union and the City Club of New York have been urging for the last five years. Their proposal is to amend the Public Officers Law to provide that the acceptance of a public office shall constitute a waiver of a witness's constitutional privilege against self-incrimination in any public inquiry into his conduct of such office.

There is some disposition on the part of lawyers generally to pooh-pooh the whole idea as unconstitutional. Perhaps it will suffice to quote the Committee on the Amendment of the Law of the New York City Bar Association which considered the bill and gave it their approval. Said the Committee:

"The constitutional provision in question is found in Article 1, Section 6, as follows: 'No person shall . . . be compelled in any criminal case to be a witness against himself.' It is elementary that any privilege, even one granted by the constitution, may be waived by the recipient, if public policy is not thereby violated. It was held in *People v. Rosenheimer*, 209 N. Y. 115, that such a waiver may be compelled by the Legislature as the condition of a grant of a privilege, in that case to operate a motor vehicle. While it may be true that it is the privilege of every citizen to hold a public office or employment for which he is qualified, no one is compelled to accept such an office, and it is believed to be within the constitutional power of the Legislature to enact that such an acceptance shall constitute a waiver of this privilege of a witness.

"It certainly seems anomalous that a person may obtain public office, commit a crime therein, and defy prosecution therefor. There is in this respect a difference between public officers and private citizens which justifies the variation in legislative treatment of them. The bill is clearly in the interest of public justice."

The immunity against self-incrimination is not only denied the "hit-and-run" motorist, but the patent-medicine faker and the gambling-house keeper as well. The present suggestion is to put the delinquent public officer in the same category, not because he necessarily bears any kinship to any of these, but because of the peculiar trust imposed in him. With the endorsement of Governor Roosevelt, who insisted on its inclusion in the Democratic platform, there is strong prospect that such an amendment will succeed.

ANNUAL CEREMONIES FOR FOREIGN-BORN CITIZENS PROPOSED

As a result of an inspiring meeting held in Avon Park, Fla., on the birthday of Edward Bok, October 9, to commemorate "The Foreign-born Citizen," a resolution was adopted urging the observance of a similar ceremony throughout the United States annually on an agreed date.

The commemoration, which was sponsored by the Associated Boards of Trade of the Scenic Highlands, of which Grosvenor Dawe, of Lake Placid, is Secretary, was preceded by a parade led by the Florida National Guard and composed of members of civic and fraternal organizations, the American Legion, high school students and the public at large. As the procession filed into the auditorium the foreign-born representatives of the various Scenic Highlands communities took their places on the platform along with civic officials and various civic bodies of Avon Park. The national anthems of twenty foreign countries were played, and those on the stage and in the audience stood at attention while the song of their fatherland was heard. Then followed the Star Spangled Banner, and a number of addresses and messages stressing the contribution of Edward Bok and of foreign-born citizens in general to the progress and welfare of the country. Flags of sixty-five nations were displayed.

TRAFFIC ENGINEERS ORGANIZE NATIONAL INSTITUTE

To advance the profession of traffic engineering, to stimulate research in street traffic matters, to encourage and foster traffic engineering education in colleges of engineering, and to establish a clearing-house for authoritative pronouncement on matters of street travel, a national organization of representative traffic engineers of the United States, to be known as the Institute of Traffic Engineers, has just been established.

Ernest P. Goodrich, consulting engineer, of New York, is President. Other officers are: Dr. Miller McClintock, Director of the Albert Russel Erskine Bureau for Street Traffic Research of Harvard University, Vice-President; and Hawley S. Simpson, research engineer, American Electric Railway Association, New York, Secretary-Treasurer. Burton W. Marsh, Traffic Engineer of the city of Philadelphia, and Guy Kelcey, Manager, Traffic Engineering Division of the American Gas Accumulator Co., of Elizabeth, N. J., were elected to the Board of Managers. Headquarters are to be at 175 Fifth Avenue, New York. Committees have been appointed to prepare a course of study in traffic engineering for use in engineering schools, to clarify the terminology and nomenclature of the profession and to study the whole problem of street traffic and advise on matters which should be subjected to research.

Membership invitations will be extended to qualified engineers. An important membership requisite will be the submission of a thesis on some subject in traffic engineering not heretofore adequately covered.

Refuse Disposal Made Inoffensive

White Plains, N. Y., has Developed an Efficient Collection System and Built an Architecturally Attractive Incinerator on a Well-landscaped Plot of Land

WESTCHESTER County, adjoining the city of New York on the north, is one of the finest residential counties in the metropolitan area. Except for scattered areas in the northern portion of the county and the large number of golf courses and country clubs, the county is closely built up. In the heart of Westchester County is located the city of White Plains. The area of the city is about 10 square miles, including one square mile of watershed, but the garbage and refuse collection service is supplied to only 5 square miles of this area, the remainder being in the second tax zone. A total of 35,000 people are served by the Department of Public Works in the removal of all household refuse, including garbage, rubbish, tin cans and ashes.

Collection

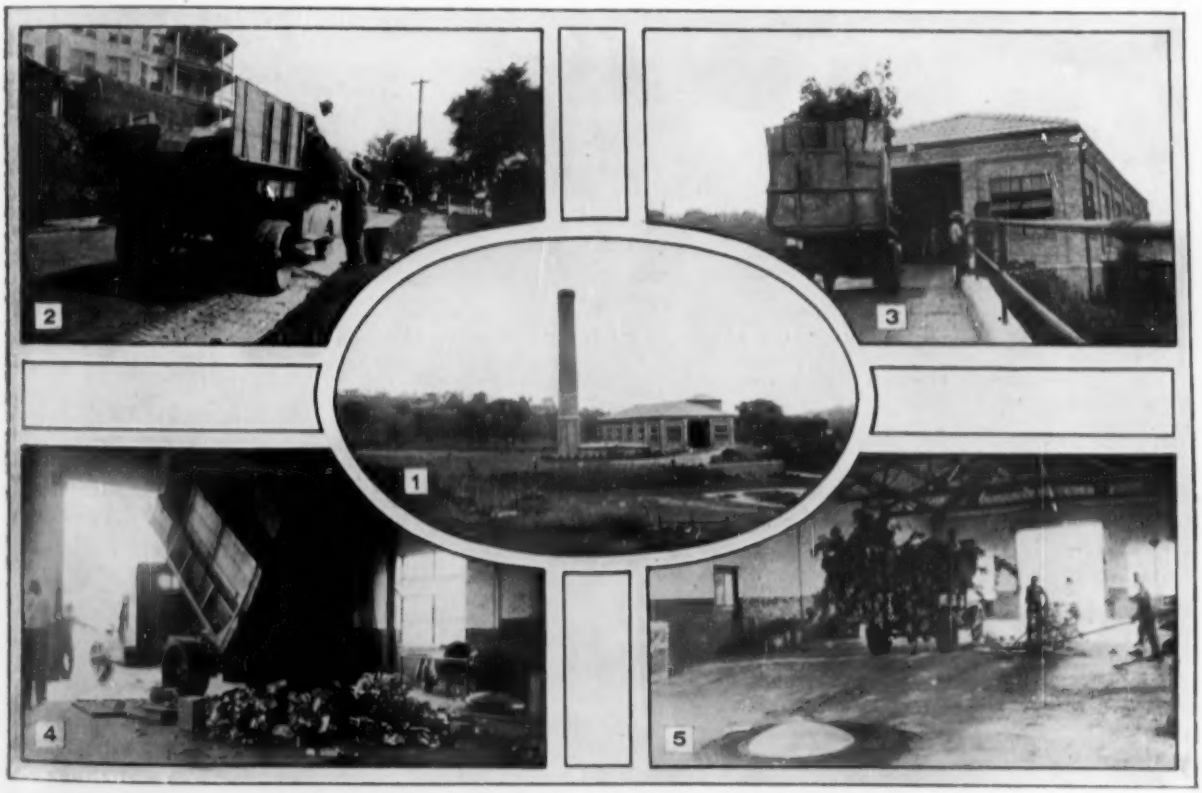
The five square miles of the city from which garbage and refuse are collected is divided into three districts. The residential portions of these districts have collections twice a week, both summer and winter, while the business sections have daily service.

Eight Mack trucks with large bodies are used for collection. They are manned with a driver and two men on the ground and one in the truck. When the truck is filled, it is covered with a tarpaulin and starts to the incinerator immediately with the driver and one man, while the other two men go to the nearest collection truck and assist that crew. The longest haul for garbage and refuse is 2½ miles and the shortest haul simply from the street 100 feet into the incinerator, as the incinerator is located on the edge of the area served. Between 1,700 and 1,800 tons of garbage and refuse are incinerated per month at the plant.

Ashes are not hauled to the incinerator, but are taken to a point about 1½ miles from the incinerator and dumped in a low area where a municipal yard is being developed. Two men are kept at this dump at all times to trim it and prevent its use for undesirable fill. Clinker from the incinerator is hauled to a hole about ¼-mile distant and used for fill. This has been used ever since the incinerator was built, but will soon be completely filled, when another suitable point must be found for the disposal of the clinker.

Early Attempts at Incineration

The original incinerator at White Plains was built in 1919 and 1920, and had a capacity of 20 tons per 24 hours.

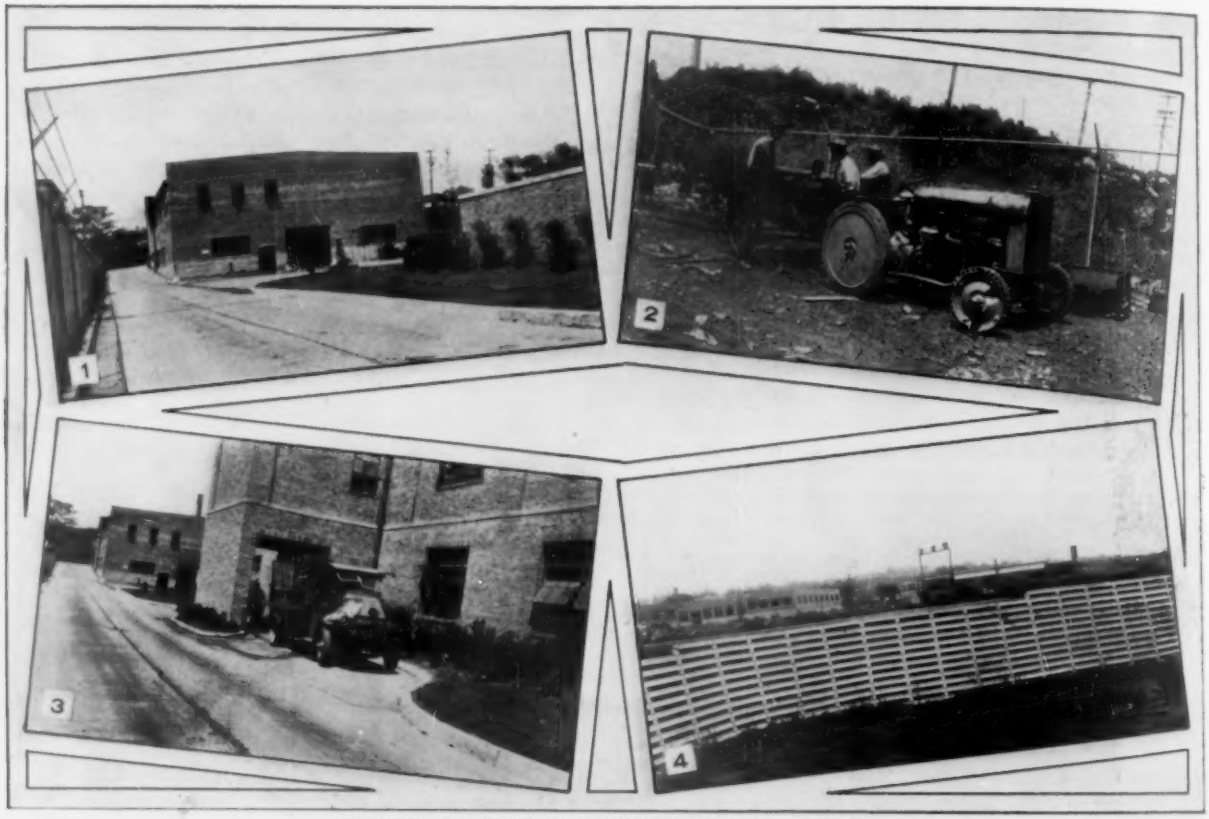


COLLECTING AND INCINERATING THE REFUSE OF WHITE PLAINS, N. Y.

1. A view of the incinerator from a distance, showing the well-kept grounds. 2. Collecting tin cans and combustible refuse. 3. A load of waste on the scales built into the ramp leading to the incinerator. Every load is weighed. 4. Dumping a load of garbage into one of the three Nye circular furnaces. 5. The Forestry Department delivering a load of freshly trimmed limbs of trees

A second incinerator was built in 1924 with a capacity of 40 tons in 24 hours. These two plants proved very unsatisfactory, one of them being practically destroyed by a fire and the other maintained only with considerable difficulty. The grounds around the two plants, which were located almost on the site of the present very attractive structure, were most unsightly and the area was locally referred to as "The Hole."

In 1926, an appeal was made for a new incinerator which would handle the refuse-disposal problem in White Plains for many years to come. A total of $155,000 was appropriated and in 1927 and 1928 the new Nye incinerator, with a capacity of 150 tons in 12 hours, was built



IMPORTANT ACTIVITIES ON THE INCINERATOR GROUNDS

1. The Department of Public Works garage adjacent to the incinerator. 2. Cleaning up a Littleford asphalt kettle preparatory to its continued intensive use. 3. The ash-dump from the incinerator. 4. A snow-dump made of concrete cribbing above a small stream

from plans prepared by the Department of Public Works and a local architect. The plant was placed in operation early in March, 1928, and has been a source of great satisfaction to the community in that before the collection system and the new incinerator were started as many as 25 complaints were received daily from taxpayers and householders, while at the present time scarcely that number are received within one year. A clerk in the office of the Commissioner of Public Works handles the complaints promptly as they are received, and a small Mack truck, which is used to handle unusual accumulations of refuse or garbage, is immediately dispatched to clear up the difficulties.

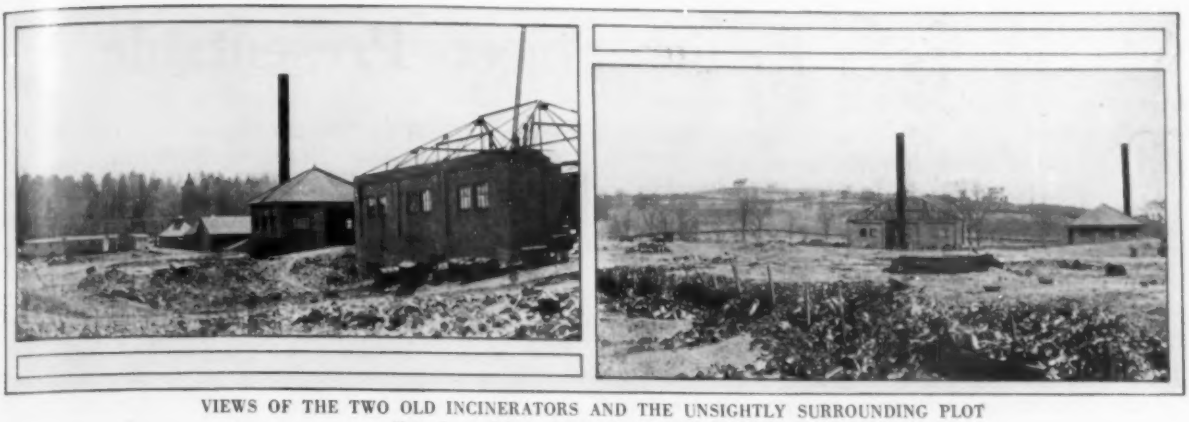
The New Incinerator

The new incinerator measures 50 x 100 feet and is erected adjacent to the Department of Public Works garage in the southwest corner of a park of about 2 acres. The building is of brick with light stone trimming and is approached by a cobblestone ramp from the east. The trucks stop just before entering the building, and each load is weighed. Thus a careful record of the performance of the incinerator is maintained. The trucks then drive into the building and dump their loads into the holes over one of the three circular furnaces. So well is combustion maintained that, even when a fresh load of garbage or refuse is dumped on the fire, the smoke from the 100-foot stack scarcely ever reaches No. 1 on the Ringleman chart.

An attractive lawn is maintained throughout the area around the incinerator, and the ramp leading from the incinerator is surrounded by a rock garden and appropriate shrubbery. Shrubbery is also attractively grouped against the foundation of the building and outside lawns so that it presents the appearance of a well-kept industrial plant rather than the means of disposing of the unwanted wastes of the community.

Operation

There are four laborers on the day shift at the incinerator; two handle the unloading of the trucks, and two are below, working on the fires and cleaning them. A superintendent is in charge of the incinerator. The night shift, which works from 3:30 in the afternoon until 11:30 at night, consists of two men who pull the fires and clean up ready for starting the incinerator with a fresh fire the first thing in the morning. Once a week the unloading floor and also the floors around the furnaces are scrubbed with sand. As there are three separate furnaces, one is permitted to rest each day, the other two carrying the load.



VIEWS OF THE TWO OLD INCINERATORS AND THE UNSIGHTLY SURROUNDING PLOT
Note the roof burned away in one of the buildings

In this way, should it become necessary to make repairs to the firebrick in a furnace, the plant would not be overloaded during the repair period.

Costs

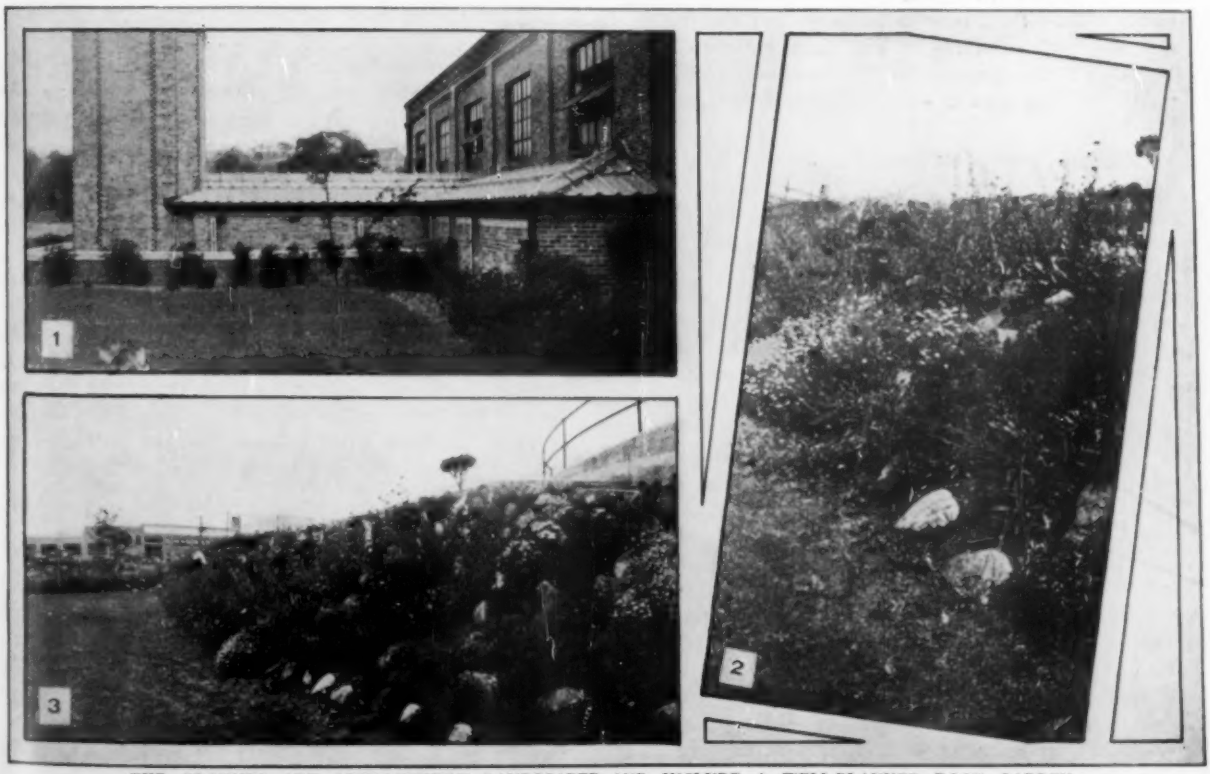
The labor force on collections consists of 32 men and one foreman who operate the 8 trucks. During the last fiscal year, the cost of labor for collection was $62,000, maintenance of equipment $5,000, and the total, including insurance and miscellaneous items, $76,000. The cost for the operation of the incinerator was $19,000, which included maintenance, labor, lights and power, materials and supplies and insurance. The total cost for the entire collection and disposal system was $95,000, or $2.64 per ton per year.

Snow Disposal

At the northeast corner of the well-groomed plot is a cinder area terminating at a concrete cribbing. Below this is a small stream into which all snow removed from the streets of White Plains during the winter is dumped. The area is floodlighted for night work.

A Courageous Enterprise

Much credit is due the Commissioner, the Common Council and citizens of White Plains for appropriating the money necessary for a well-built, well-landscaped incinerator of sufficient size to permit the disposal of all of the refuse of the community within 12 working hours per day. Every employee of the Department working on the collection and disposal system is enthusiastic, which has greatly benefited the community through the teamwork of the organization. The collection and disposal system was developed and built and is operated under the jurisdiction of the Department of Public Works, of which Eugene Halpin, Jr., is Commissioner.



THE GROUNDS ARE ATTRACTIVELY LANDSCAPED AND INCLUDE A WELL-PLANNED ROCK GARDEN
1. Planting of shrubbery around the building, flue and stack. 2 and 3. Views of the rock garden with its varied flowering plants

Keeping British Streets Presentable

ENGLAND, partly because of its freedom from constitutional restrictions, is far in advance of the United States in provisions for the harmonious development of city and countryside. Whereas practically no public body in the United States has legally established its right to pass upon the architectural design of buildings fronting on public streets and highways, every English local authority is given certain rights in this direction for areas included in town planning schemes—a power recently greatly broadened by the addition of a model clause to the empowering legislation; and any local authority may exercise more drastic control under special authority from Parliament for the use of such rights in connection with town planning schemes, or even where no town planning schemes are active or anticipated, but in connection with street widening or other public improvements.

A digest of existing laws in Great Britain, and of progress made under the laws in municipal corporations, boroughs and counties, has been prepared by the International Federation for Housing and Town Planning and is printed in its Bulletin No. 23, in English, French, and German, together with a review of "Architectural Control over Town Development in Norway."

Control Under Town Planning Powers

It is here noted that Great Britain's first Town Planning Act (1909) empowered local authorities to make schemes with the object of securing not only proper sanitary conditions, and convenience, but also "amenity," in the laying-out and development of land. "It exempted local authorities from liability to compensation in respect to provisions that, *inter alia*, prescribed the 'height or character' of buildings." The Ruislip-Norwood Town Planning Scheme, passed in 1914, included a clause controlling elevation as an essential part of the character of buildings.

"For some years after the end of the war, local authorities were chiefly interested in getting as many houses erected as cheaply as possible. Latterly, the spread of ugly buildings has aroused public opinion, and the Ministry of Health has prepared and issued a model clause for use in town planning schemes." This clause, it is noted, largely copies procedure approved by Parliament in the local act of the Bath Corporation, cited below. It applies only to areas where town planning schemes have been made or are in preparation—and town planning schemes in England apply in general only to land that is in course of development or appears likely to be used for building purposes. However, "a few local authorities, for example, Newcastle, Blackpool, Birmingham, Chester, have obtained powers direct from Parliament *to apply the act to all land*, whether built upon or not. The Town Planning Act also gives power to the Minister of Health to permit a local authority to prepare a town planning scheme ('prescribing the space about buildings, or limiting the number of buildings to be erected or prescribing the height or character of buildings') for any area, whether built upon or not, *if it appears to him that a scheme is expedient for preserving the special architectural, historic, or artistic character of the locality*." Such schemes are already being prepared for the historic cores of such cities as Canterbury, Exeter, Oxford, Southampton, and Winchester.

These powers enable the special character of an historic area to be preserved, that is, the local authority may control new building and the alteration of existing façades fronting the streets and may form advisory committees to which such questions may be referred. They cannot prevent decay or demolition so far as inhabited premises are concerned except by purchasing the property by private treaty. Historic buildings not inhabited, except by the caretaker, can be protected under an Ancient Monument Act, passed in 1913.

General Powers Under Local Acts

In 1921, the Liverpool Corporation obtained the following powers under a local act to pass upon the plan of the elevation—and of any other plans that may be required of every new building—and the building may not be erected without this approval. Appeals against withheld approval are heard by the Minister of Health, or his representative, whose decision is final.

In 1925, the Corporation of the city of Bath, which has much fine architecture, was authorized by Parliament to make by-laws requiring elevations to be submitted to them. These by-laws provided that where the Corporation considered that the height of a proposed building or addition or chimney, or the design of the materials to be used, would seriously disfigure the city, it might refer the elevations to an advisory committee. The same powers have since been granted on petition to certain other local authorities.

The Brunswick Square and Terrace Act is cited as an interesting hundred-year-old example of permanent control by a private act. It was passed in 1830, and provides for the management and maintenance of the squares and terraces of the Wick Farm Estate, Hove, a town adjoining Brighton. One of the clauses provides for preserving uniformity of appearance in the front façades of the houses erected and to be erected. It governs such matters as front railing and balconies; it also requires the fronts of the houses to be covered with cement of a uniform stone color, and the front elevations to be maintained unaltered and without variations. The outside of the houses must be painted in uniform color every three years, and there is a penalty for lapses in this particular. This Act is administered by the Hove Town Council, and the Borough Engineer selects the color and issues the notices to the owners to paint.

Street-Widening and Improvement Schemes

Interesting provision is made in the local act of 1925 under which Parliament authorized the buying by the municipal corporation of extra land along the route of a street improvement in Leeds, and simultaneously instructed Sir Reginald Blomfield, R. A., to prepare designs for the façades of the buildings to front on the street. Designs were prepared not only for buildings on frontages to be sold by the Corporation, but also on buildings

on land the Corporation had not acquired. More recently the municipal Corporations of Bradford and Hull have made similar architectural provisions. As early as 1899 Parliament passed a local act for an improvement scheme in Bradford. This act provided that the elevations of all buildings to be erected in streets that are made, widened, extended or improved under the scheme must be submitted to the Corporation for approval. The act applied to substantial alterations. Several larger local authorities now have similar powers.

Allied regulations in effect in Great Britain, under town and regional planning schemes and otherwise, cover the Upkeep of Private Open Spaces and Private Gardens, Preservation of Ancient Monuments, Control of Advertisements, Control of Roadside Gas Stations; and there are numerous voluntary quasi-public bodies working without official authority but with public sanction in the promotion of "amenity."

How Does the City Look from the Air?

German Architects Are Finding Out

By **PAUL D. MILLER**

GERMANY is the pioneer in a style and form of architecture that must eventually be considered by all progressive countries which place importance on national culture. Owing to the rapid progress in air passenger traffic, German architects are considering not only the appearance of the structure from front and side elevation, but from above—the "H" view, as it is called in mechanical drawing.

Early impressions count a great deal in the forming of opinions, especially in regard to one's judgment of cities. After the first thrill of flying is gone, passengers who get their first view of a city from the windows of a plane notice what is inharmonious, and observe that many streets, architecturally correct when viewed from the ground, are eye-sores when seen from above.

The New Point of View

Many of Germany's prominent architects have made airplane journeys to view their work from a new angle. Most of them admit, if they doubted it before, that nature is a better artist than man when his work is viewed from the air. At an altitude of 5,000 feet, the lakes around Berlin, dotted with gems of islands and peopled with myriads of sailboats which look like toys, present a remarkable picture. Parks and squares, laid out in geometrical designs, resemble the art of the Japanese in their little gardens of pebbles and strange plants.

But the apartment houses and many other buildings are not inspiring. Ugly chimneypots and flat and dreary roofs should become things of the past.

The real reason why German architects are considering air views of their cities lies in a race characteristic which can be summed up in "Ordnung muss sein"—"There must be order." This desire for beauty and harmony is felt by the designer of buildings as by every other craftsman, artisan and professional man. No doubt the architects would have built their roofs differently, had they been able to see the incongruous picture presented. Now that they have seen, they are proceeding to bring this part of the building program under the slogan of order.

Civic Boards of Architecture in German Municipalities

It may be well to remind the reader that every city and town in Germany has a civic board of architects and that no building plans are passed by this board unless the architectural fitness is proved to their satisfaction. In this way, harmony is maintained around the numerous squares and in the streets themselves. A structure may be approved for one section of the town and turned down for another—this frequently happens.

Some time ago, it was announced that a French department store company had purchased a site on Potsdamer Platz, one of the busiest parts of the German capital. Plans were presented, and rejected. Immediately the sensationalists cried that this act was a slap at the French people. American papers took up the cry as a means of showing the unfriendliness still existing among European nations, and their desire to pick quarrels whenever the occasion presented itself.

A closer scrutiny disclosed that the plans as presented would have marred the present architectural harmony of the Platz. All the buildings in the vicinity have the same structural theme. By bringing a stranger into their midst, the picture would have been spoiled. It was shown, moreover, that Germans were back of the department store scheme and that not a centime of French money was invested nor were any Frenchmen interested in the project.

It must be said that the older buildings with steep roofs, numerous gables, and broken lines present a far more pleasing picture to the air traveler than the present forms of flat roofs with squatty chimneys. The old section of Nuremberg proclaims its age and picturesqueness from even a high elevation. Little imagination is needed to complete the picture of quaint homes, winding stairways and massive walls, when one looks on the roofs along the narrow, crooked streets. The setting is complete from every angle.

Trees and Shrubbery Important Factors

To give proper significance to the bird's-eye of the modern buildings is now the task of the designers of homes. How they will overcome the present lack of beauty has not been determined. Certainly, evergreen shrubbery will find a new use, since it will be able to hide barrenness. But, in addition, the lines must be changed, for there is little beauty in a series of straight lines from one end of the city to the other. Few streets are straight for any distance, but too many parallel lines along curving avenues destroy the harmony.

To modernize Berlin from the architects' new air viewpoint will be simplified greatly by the fact that there is an abundance of trees; in fact, it is stated that there are more trees in Berlin than in any other city in the world. How much this adds to the beauty of the capital is difficult to estimate. Berliners are proud of their trees and give them the best of care.

HAMBURG, GERMANY, CONTINENTAL EUROPE'S GREATEST SEAPORT

In the foreground is the old Hansa town's beautiful City Hall. The Alster Basin is a great field for water sports. This photograph shows how the usual roofs with their irregularities—chimneys, flagpoles, electric signs, windows—look from an airplane

THE PERMANENT BUILDINGS CONSTRUCTED IN RECENT YEARS ON THE EXPOSITION GROUNDS, DUESSELDORF, GERMANY

The roofs of all these buildings were designed to give a pleasant view from the air. They are free of flagpoles, smokestacks and attic windows, their lines are regular, and where domes have been used, an attempt has been made to place them symmetrically

CENTURIES AGO, THE ROOFS OF ROTHENBURG, GERMANY, LOOKED AS THEY LOOK TODAY

Photographs by courtesy of German Tourist Information Office, New York

THE ORDERLY LINES OF THE NEW WEISSENHOF SETTLEMENT, STUTTGART, GERMANY

How Can Chambers of Commerce Do a Better Civic Job?

By **CHARLES J. KELLEM**
Manager, Chamber of Commerce
Chattanooga

THERE are some secretaries who question whether or not a chamber of commerce should engage in civic work. My answer is that a chamber of commerce is just as much a civic organization as it is a commercial and industrial organization. To neglect or refuse to incorporate civic activities in the program of a chamber of commerce would be just as serious a mistake as to fail or refuse to incorporate commercial and industrial activities in the program. I would go a step further and say that in many respects, in some cities, the civic activities will outweigh in importance the commercial and industrial activities.

In referring to civic activities, I have in mind city planning, hospitalization, airports, libraries, parks and playgrounds, fire prevention, health conservation, education, annexation, clean-up and paint-up campaigns, taxation, crime conditions, street traffic regulations, housing and any other subject having a governmental flavor. All these things and many others require initiative which should be provided by the chamber of commerce.

There is a very distinct line between the things that require initiative and those that require administrative action on the part of public officials, and certainly the chamber of commerce should not encroach upon the activities of the public officials; neither should it engage in petty civic matters, particularly as they relate to the various sections of the city. But it should give attention to the really important civic matters that are city-wide in character and that affect the well-being of a majority of the citizenship. An organization which urges isolated street-paving or park projects or other improvements without considering the improvement needs of the city as a whole and the relation of that program to the city's financial condition and ability does not do justice to itself or the community which it serves.

Avoiding Duplication of Effort

The nature and extent of a chamber of commerce civic program will be conditioned largely by three factors:

a. The amount and effectiveness of civic work already being done along this line by local agencies
b. The attitude of public officials
c. The availability of research and technical facilities

If there is an alert and active taxpayers' or civic association in the community which has a constructive program and which is doing the job well, the chamber of commerce program will be vastly different from the program in a city where the field is inadequately covered.

Relationship to Public Officials

The attitude of public officials will also affect the extent and character of the chamber's civic program. If the attitude of public officials is one of cordial cooperation, this is an incentive for an active program. On the other hand, if the attitude of officials is hostile and unfriendly, it indicates the need for an active program, and possibly a very vigorous one as well.

There are instances where public officials have sought the assistance of a chamber of commerce to initiate certain civic projects that required a bond issue or an increase in the tax rate, and a campaign of publicity and education to create favorable public sentiment for the project, a situation very much to be desired in a great many other cities.

Research and Technical Facilities

The dominant factor in determining the extent and character of a chamber's civic program is the availability of research and technical facilities. If there is a bureau of governmental research in the chamber of commerce, or if there is an independent research agency in the city, a fact foundation exists for any civic program the chamber of commerce desires to erect thereon, no matter how ambitious. In Chattanooga, we have our own Bureau of Governmental Research in the Chamber of Commerce, which is in charge of a full-time research director. As a result, there is no governmental topic which our committees are not equipped to handle and handle well because their recommendations are based upon proven facts and the consolidated experience of other cities throughout the United States. At the present time our Taxation Committee has under consideration a 96-page Report on a Survey of the Organization and Business Procedure of our County Highway Department, a report which took six weeks to prepare. Similarly, legislative measures affecting our city and county government will be considered by our Legislative Committee in the light of the practice in other cities, counties and states and the practice recommended by the reputable authorities on those subjects. Were it not for the availability of these facts and the authoritative information produced by scientific research, our committee would feel extremely hesitant about considering any except the most general of governmental and civic topics. One proceeds with greater confidence—and, I may add, with greater effectiveness—when he knows exactly what he is talking about.

Those chambers of commerce that have no governmental research bureaus of their own and that are located in cities where there is no independent research agency can secure a great deal of information and research service from the Finance Department of the U. S. Chamber of Commerce and the Municipal Administration Service of New York City, and there are many authoritative pamphlets, books and magazines on the subjects.

Deliberation Before Determination

The question as to what and how much a chamber of commerce shall do along civic lines does not depend half so much on the nature of the subject to be considered as it does on the chamber's equipment and facilities to do the job well. The reason that so many chambers of com-

merce have come to grief on civic questions, especially those of a highly controversial nature, is that so many of them have been lacking in deliberation and have taken a definite position without knowing whether or not it was the right thing to do. Of course, that is always dangerous. Some organizations have actually talked public officials into making decisions which were utterly indefensible and unsound because of lack of research and technical information on these subjects.

I do not think that a chamber of commerce should avoid taking the initiative and sponsoring an important civic matter that may be controversial as between certain leaders in the community, provided the subject is one that affects the entire city. It is quite natural that the chamber of commerce will be criticised by the individuals who do not agree with its position, but nevertheless the chamber of commerce should have the courage to take a stand on such matters and do its part to bring them to a successful consummation.

Procedure Recommended

My idea of the proper set-up for prosecuting a civic program of a chamber of commerce is the appointment of a committee on civic affairs, the chairman of which should preferably be one of the vice-presidents or a member of the board of directors. The members of this committee should be selected and requested to serve because of their fitness and willingness and not merely to represent some other organization, which is so often the case. It is well, however, to see that some of the members of the committee are members of other civic organizations, in order to coordinate the activities of all civic organizations, but such members should be selected with the same care and for the same reasons that other members are selected.

Many chambers of commerce have made the mistake of recruiting the personnel of their civic affairs committee from those members who talk the most and loudest about governmental and civic affairs. The people who have the most pronounced opinions about the conduct of community affairs are the ones who are least likely to possess reliable information and sound judgment, as any public official or conductor of a newspaper communications column can testify. Some terrible blunders have been made by committees which advocated measures that were contrary to approved practice, confidently believing that they were giving the taxpayers and officials of their city real facts and expert recommendations.

The best committee material for this type of work can be recruited from those who know little or nothing about government and have the honesty to admit it. At least, they start out without the handicap of preconceived notions, false impressions and hobbies. There should be a secretary to the committee who is a member of the staff.

The committee on civic affairs, in common with all other committees of the chamber of commerce, receives its authority from the board of directors and should therefore be responsible to that body. Its reports and recommendations should be made to the board of directors, and the committee should avoid placing the chamber of commerce on record for or against any matter until it has had the endorsement and approval of the directors.

Similarly, the expense incident to carrying on the work of the committee should be included in the general budget of the chamber just the same as for all other committees.

—A paper read at the annual meeting of the National Association of Commercial Organization Secretaries, held at Tulsa, Okla., October 20-22, 1930.

Keeping the Services and Hydrants Open in Winter

By JAMES F. HAMILTON
Superintendent, Water Department, Waukesha, Wis.

Personal Observations

The author writes from his own experiences. He is a wide-awake waterworks man and always on hand where there is any trouble in any part of the system. Mr. Hamilton graphically describes the results he has obtained with one of the modern methods of opening up house services after a "freeze."

ALTHOUGH Waukesha is in a section of the country where considerable difficulty might be expected from frozen mains and hydrants, we seldom have trouble with frozen mains, because we watch them very closely, especially when they are close to the top of the ground. Dead ends which also might cause trouble and where the circulation is poor and liable to freeze are also inspected regularly. It has been our practice to flush hydrants occasionally from December to March, if we realized that poor circulation or shallow mains might cause a tendency to freeze, but after using a hydrant we make sure that it drains properly so as to keep it in good shape.

From November 1 until after March 30 no person except a Fire Department employee is permitted to use any hydrant unless one of the Water Department outside men is on the job to see that the hydrant drains properly. When the Fire Department use a hydrant in the winter months, they immediately notify the Water Department, and a man is sent out to examine each one of the hydrants which have been used.

To make sure that hydrants will drain properly, we are very careful when setting them to place them on a flat stone and put small stones around the hydrant drainholes, thus leaving plenty of openings for the water to drain away and preventing freezing. We do not have any trouble from the freezing of hydrant leads, for they are laid deep, generally in a trench 6 feet 6 inches deep.

Plenty of trouble is experienced with frozen house services, especially where an embankmant has been cut away for driveways, leaving the services 3 feet or less from the

top of the ground. If there is an early snowfall of a foot or more, however, and this snow remains on the ground, there is seldom any trouble or calls for thawing out.

Last winter we had sixty-seven frozen services and in only two cases did it take more than eleven minutes to thaw them out. In several cases we thawed out two at a time by making connections just below the water meters and using our Engesser thawing outfit. The machine we are using is an electric generator set which operates on high amperage and low voltage, and with which, when connected to an outside silcock on the next door neighbor's house and just below the water meter on the frozen service, the majority of services were thawed out in from six to eleven minutes. In the two cases where it took us nearly 4 hours, we wasted 3½ hours of this time in trying out different methods of making connections. Finally we took off the connection from the silcock on the neighboring house and hooked on to the curb stop of the frozen service and then succeeded in thawing it out in 25 minutes. Later in the spring we had occasion to take out a piece of water-main and found that it had a prepared joint in the pipe and the material used in the joint was a very poor conductor of electricity.

We had an occasion to try out this oufit on a 2-inch service line which was frozen for a distance of approximately 85 feet. It was possible to thaw this line in 27 minutes using 200 amperes and 75 volts on the thawing outfit. On house services we generally run with 150 amperes and 50 volts. The figures given above are correct as regards time, amperage, and voltage, for the writer was out on every thawing job and personally kept tabs on the work.

One of our small neighboring towns learned of our having this electric thawing outfit and called upon us for help. We responded to his call and found two homes directly across the street from each other frozen up. We hooked on below the meter in each case and the first house was cleared in three minutes, when I left to go across the street and see how the other service was coming along; just then it started dripping and in less than two minutes it also was clear and running free.

We always send out two men with the thawing machine, one of whom has complete charge of operating and maintaining the unit, while the other man takes care of attaching the lines and keeping inquisitive bystanders from touching the line, for with the high amperage one can get a pretty good kick when taking off the line before the machine has been stopped and disconnected. I personally experienced this in showing the men how easy it was to get into trouble if they did not use extreme care in keeping outsiders away from the electric connection. They should also make sure that the machine is stopped before removing connections.

One Contract for a Year's Sidewalks

LESS ANGUISH FOR TAXPAYERS

"Why do I have to pay more for the same kind of sidewalk than Jones over on the other side of town?" was a not uncommon question before St. Paul awarded its sidewalk contracts on a 12-months basis. The new method equalizes costs and saves money for everybody.

FOR years the city of St. Paul, Minn., has let one contract for all the sidewalks to be constructed during the year. The result has been a worth-while reduction in the cost of letting contracts, as well as cheaper bid prices and easier administration.

At the beginning of each year the City Engineering Department estimates roughly the amount of sidewalk to be built during that year. The estimate includes monolithic concrete walk, new precast cement tile walk, and re-laying old cement tile. Bids are taken on these estimated quantities, and the contract for all the walks to be built that year is let to the lowest bidder.

At first the city was divided into several sections, and the walk in each section was let separately. But the property owners in one section, possibly far from the contractor's plant or the material yards, could never understand why they should have to pay more for walks than those in some other section. So in recent years all the walk to be built has been let to one contractor.

When petitions asking for walks are presented to the City Council and when walks are ordered for a certain street, the property owners affected are allowed ten days in which to file a waiver agreeing to build the walk themselves by private contract. If no waivers are filed, the city orders the contractor who has contracted for that year's sidewalk to proceed with construction.

The cement tile used in walks are 2 inches thick. The lower 1½ inches of the tile is composed of mortar proportioned 1 part cement to 4 of sand. The upper ½-inch is proportioned 1 cement to 2 sand.

The tile are laid on a cement sand bed 2 inches thick, proportioned 1:4. The sand cushion is spread dry, then sprinkled until damp, just before the tile are laid on it. The joints between tile are filled with a neat cement grout.

Monolithic walks are the one-course type, built of 1:2:3½ concrete having a required cement content of 1.57 barrels per cubic yard. The Engineering Department prefers the monolithic walk, but because of their slightly cheaper price, the property owners frequently favor tile walks, and many are still being built.

COST PER SQUARE FOOT OF SIDEWALK FOR TEN YEARS

	Cost of Tile in Cents per Square Foot				Cost of Monolithic Walk in Cents per Square Foot					
	New Tile		Old Tile		4"		5"		6"	
Year	Sq. Ft.	Cost	Sq. Ft.	Cost	Sq. Ft.	Cost	Sq. Ft.	Cost	Sq. Ft.	Cost
1930	.....	14½	.....	07	.....	17	.....	18	....	20
1929	230,685	14	80,469	05¼	12,128	17	28,022	17	1,666	20
1928	283,227	13¾	56,267	05	25,853	16½	245	17½	2,103	20
1927	363,963	14½	95,080	05	.....	....	53,338	17	....	..
1926	459,019	14½	85,319	03	.....	....	4,047	17	....	..
1925	678,958	15¼	114,075	03	.....	....	18,763	21	....	..
1924	526,045	15½	94,944	04	.....	....	1,935	16	....	..
1923	503,912	16	38,458	04	.....	....	2,073	20	....	..
1922	485,416	12½	143,292	07	.....	....	3,060	23	....	..
1921	469,614	09¾	78,401	04¾	.....	....	11,335	25	....	..
1920	68,385 39,513	14¾ 11	19,513 10,212	08 06	.....	....	3,264 2,446	30 20	....	..

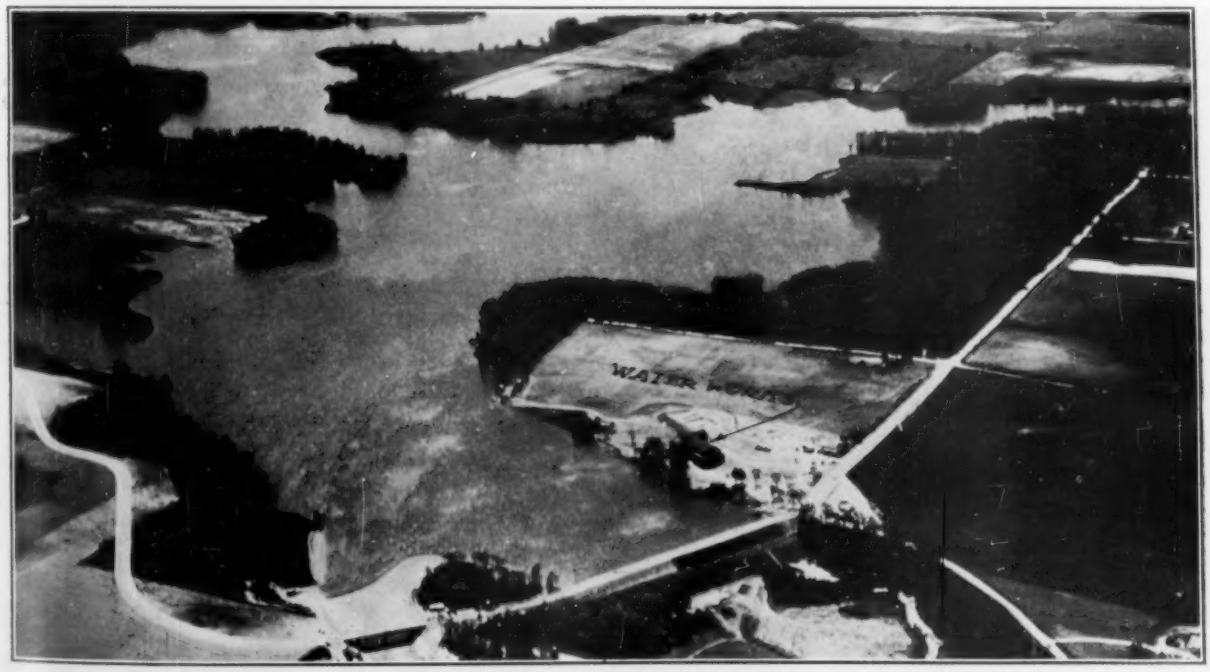
STATION BUILDING FROM THE DAM
The circular tower houses the wash-water tank above and the low-lift pump-pit below

Citizens Privately Finance New Water-Works for Bloomington, Ill.

By L. R. HOWSON, M. Am. Soc. C. E.
Alvord, Burdick & Howson,
Consulting Engineers,
Chicago, Ill.

AFTER nearly fifty years' experience with one of the hardest municipal water-supplies in the country, Bloomington, Ill., has abandoned its well supply and developed an impounded filtered and softened supply. The well water-supply heretofore used, has a maximum hardness during dry seasons of approximately 55 grains per gallon, half of which is due to magnesium sulphate. The lack of a better water-supply has seriously retarded the growth of Bloomington, and it was the realization of this fact, combined with frequent shortages, that led to the decision to construct the new supply.

This effect of a hard water-supply upon the growth of Bloomington is illustrated graphically by Figure 1, which shows the growth of Bloomington and ten other cities in the state of Illinois from 1860 to 1920. The diagram also shows the hardness of the water-supplies in each of these



GENERAL LAYOUT OF THE DAM, PURIFICATION AND PUMPING STRUCTURES, THE LAKE AND MARGINAL LANDS

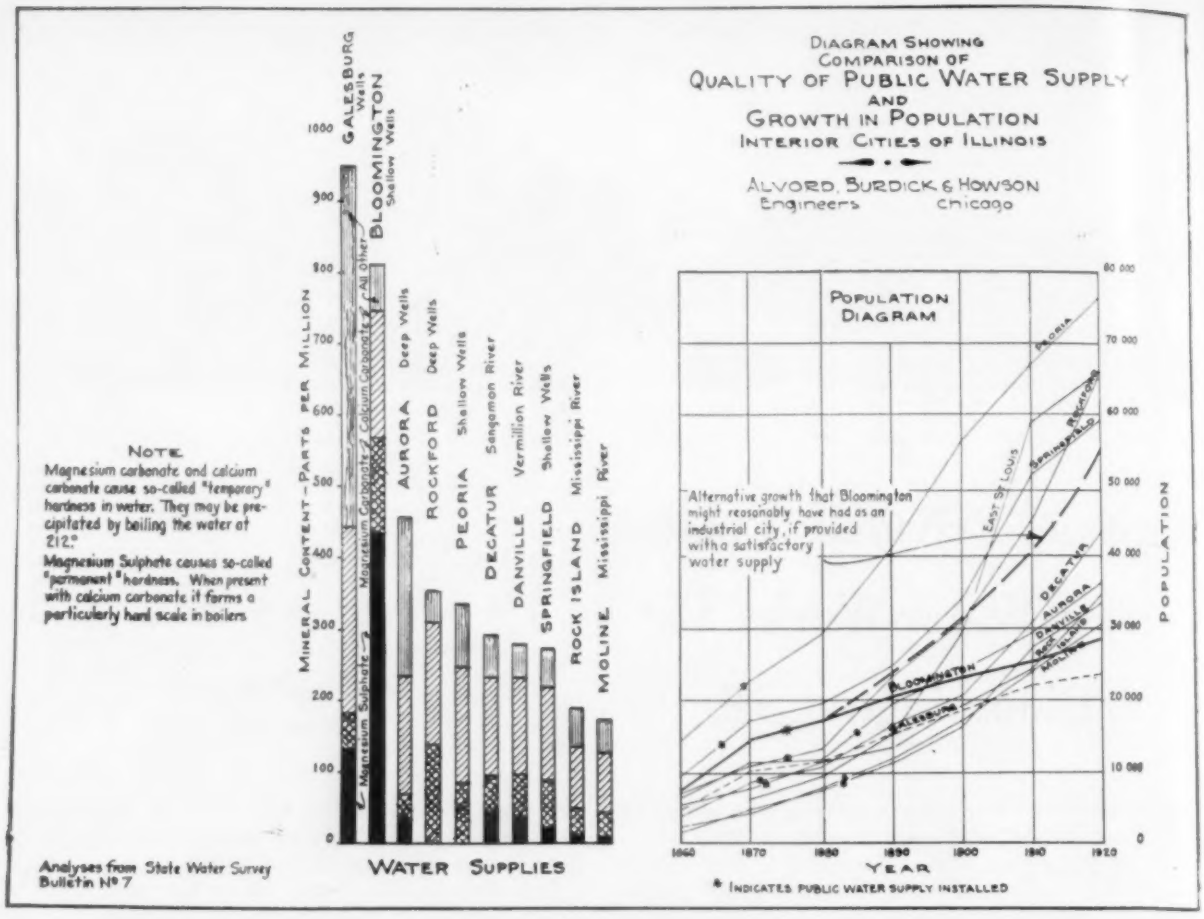


FIGURE 1

cities. At the beginning of the period, Bloomington was third in size. At the end of the period, it stood in tenth place. While its growth in the first two decades was as rapid as that of the other cities, it is apparent that from about the time at which these communities became supplied with municipal water systems, Bloomington and Galesburg relatively fell behind in their rates of growth.

Method of Financing New Water-Supply

The city of Bloomington and the various organizations, such as the Association of Commerce, had long been cognizant of the retarding effect of the municipal water-supply, but were not able to finance the relatively large expenditures involved. In 1928, twenty-five leading citizens organized a local company, each taking out one share of stock at $100, the total capital stock thus being $2,500. With this as a nucleus, the construction cost of $1,200,000 was financed through the sale of $900,000 in bonds and $300,000 in preferred stock, the latter being 6 per cent cumulative and sold locally. The company is a non-profit organization. Rates were established which would pay the operating expenses and fixed charges and in addition set aside a sinking-fund which would retire the entire investment in from fifteen or twenty years. At that time, after all outstanding bonds and preferred stock have been retired, the twenty-five stockholders will each be paid their $100, the corporation dissolved, and the property transferred to the city of Bloomington without cost.

FRONT VIEW OF STATION BUILDING
Filters to the left and chemical headhouse to the right of entrance

This company wholesales water to the city. The charge is at the rate of 13 cents per 1,000 gallons for the first 3,000,000 gallons per day, 11 cents per 1,000 gallons for the next 3,000,000 gallons, and 9 cents per 1,000 gallons for all thereafter. Approximately 2 cents of this charge is for the sinking-fund.

Description of Project

The Bloomington water-supply development includes the construction of a large impounding reservoir located on a watershed approximately 14 miles northeast of the city of Bloomington, the construction of a 5-million-gallon water-softening and filtration plant with low-lift and high-lift pumping equipment, and a 14-mile 24-inch pipe

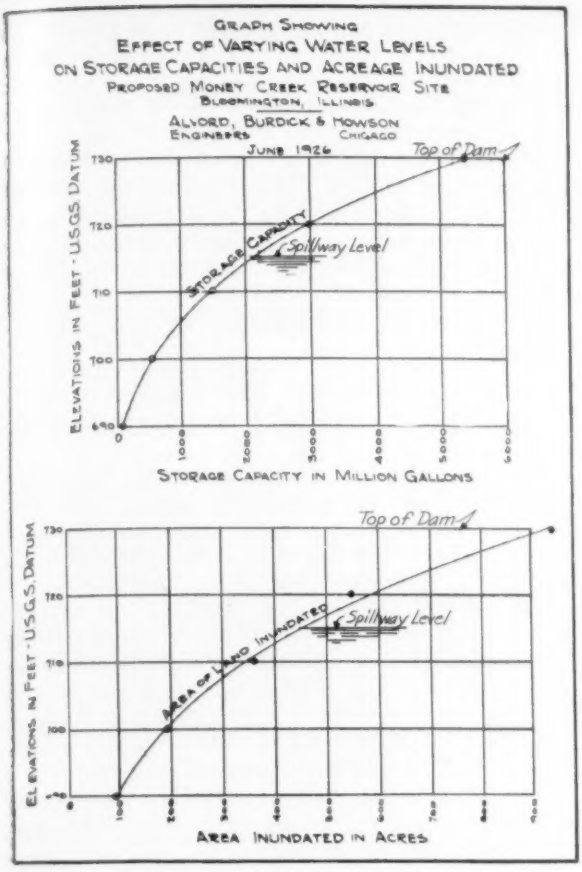


FIGURE 2

line. This line discharges into a 10-million-gallon low-service reservoir located at the site of the main pumping-station in the city. From this reservoir, the water is distributed by the existing pumping equipment.

Impounding Reservoir

The source of the supply is Money Creek, a stream having a drainage area at the site of the dam of approximately 60 square miles. An excellent dam site was available, the valley at the point selected having relatively steep sides, approximately 50 feet above the valley floor and requiring a dam only 800 feet in top length.

Careful studies were made of rainfall and run-off records for the general locality, and from these studies, combined with surveys of the reservoir site, conclusions were drawn as to the relation between storage and the amount of water which could be withdrawn during the dry cycles of years. Figure 2 shows the relation between the storage capacity in million gallons and the elevation of the water surface in the reservoir. The spillway level as constructed is indicated on this diagram. The reservoir impounds approximately 2,200,000,000 gallons and, as shown on the lower part of figure 2, inundates approximately 450 acres of land. It is estimated that this storage will be sufficient to sustain a flow of 11 million gallons daily during the driest cycle of years likely to be recorded once in a period of 50 years' duration. Figure No. 3 shows the estimated yield with varying storage developments.

The water company purchased approximately 1,100 acres of land, or about 2½ times the amount actually flowed, so that ample marginal lands are available both to protect the water margins and to preserve the natural beauty of the site. The site was largely wooded. All trees below spillway level were cut. Stumps near the water-line were grubbed. Trees and growth above the water-line were disturbed as little as possible. The lake has over 14 miles of shore-line and, as it is in a district in which natural bodies of water are lacking, it is already largely used for water sports. The aerial photograph shows the general layout of the dam, purification and pumping structures, the lake and the marginal lands.

The dam is of earth construction, with a maximum height of 45 feet. The top width is 20 feet, to provide for a roadway. Slopes of 3:1 on the water-side and 2:1 on the downstream side are used. A berm is provided at mid-height on the downstream side. Upon completion, all areas above paving and upon the back of the dam were seeded. No seepage is visible around or through the dam.

The dam has a center core wall of concrete extending into the subsoil an average depth of approximately 10 feet to form an impervious cut-off with the blue clay substratum. The wall is 12 inches thick at the top. Both sides batter at 1:24.

The earth fill was deposited in layers of from 6 to 12 inches, carefully compacted by a 10-ton grooved roller. The upstream face is protected against wave wash by concrete paving.

A concrete crest spillway 310 feet in length is provided. This spillway discharges into a channel excavated around one end of the dam entirely in original ground. The upper part of the channel is paved with concrete. The spillway channel has a capacity of 20,000 cubic feet per sec-

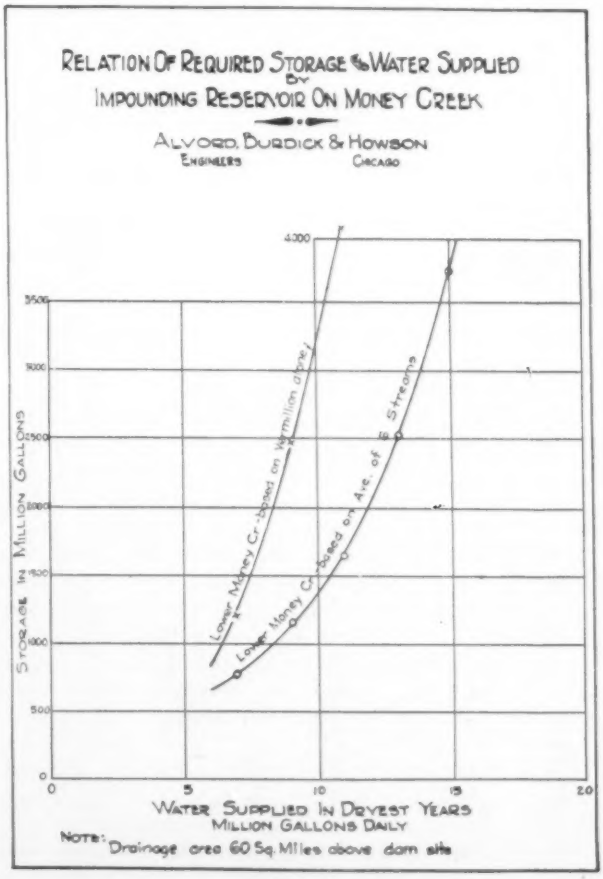

RELATION OF REQUIRED STORAGE TO WATER SUPPLIED
BY
IMPOUNDING RESERVOIR ON MONEY CREEK
ALVORD, BURDICK & HOWSON
ENGINEERS CHICAGO
STORAGE IN MILLION GALLONS
Lower Money Cr. based on Vermilion data
Lower Money Cr. based on Ave. of 6 Streams
WATER SUPPLIED IN DRYEST YEARS
MILLION GALLONS DAILY
NOTE: Drainage area 60 Sq. Miles above dam site

FIGURE 3

ond (333 c.f.s. per square mile) with a 6-foot freeboard. The crest of the dam is 15 feet above the normal water-level, the liberal height being provided by surplus excavated materials from the spillway channel. All that will be required to double the storage capacity of the impounding reservoir will be to acquire some additional land and to raise the spillway crest.

The past summer has been a very dry one in the central Illinois district. Up to September 1, 1930, the water-level has receded less than 2 feet below the spillway level, this being equivalent to a withdrawal from storage of approximately 250 million gallons. The daily pumpage has averaged 2,800,000 gallons.

Quality of Supply

The Bloomington reservoir water, like other surface supplies of this section, is relatively hard, 200 to 240 p.p.m., of which about 45 p.p.m. is non-carbonate hardness. The color averages 35 and the turbidity about 20 p.p.m. The bacterial quality of the untreated water is very good.

An analysis was made of the added cost of softening in connection with filtration compared with the resulting benefits. The relatively slight added cost was so well justified that plans were made to include softening by the lime soda process, preceded by aeration and including recarbonation. As operated to date, lime and alum have been used, although the plant is equipped to feed soda-ash. The treated water now averages 85 p.p.m. hardness.

Pumping and Purification Plant

The pumping, filtration and softening equipment is housed in a substantial brick building of architectural design to conform with the ultimate development of the grounds, which will resemble that of a country club on the shore of a lake. All operations are under a common roof. The plant was designed so that one man can conveniently care for all operations, from chemical feeding to pumping and laboratory analyses.

The low-lift pumps are housed in a circular pit 30 feet 8 inches in internal diameter and approximately 43 feet deep. The wash-water tank for the filters is located directly above this pit on a reinforced concrete floor.

The low-lift pumping equipment consists of:

1 3-m.g.d. motor centrifugal pumping unit
1 5-m.g.d. motor centrifugal pumping unit
1 5-m.g.d. gasoline engine centrifugal pumping unit

These pumps take suction from the lake through two cast iron intakes with perforated screens located at different levels. Provision is made to backflush and clean the screens.

The low-lift pumps discharge into two reinforced concrete circular mixing tanks 30 feet in diameter by 21 feet deep, providing a 60-minute period for mixing. From the mixing chambers, the water flows to two mechanically cleaned settling basins, 70 feet square and 12 feet 6 inches deep at the walls. Each basin is provided with a Dorr clarifier of the traction type. The clarifier period is four hours.

The mixing and clarifier facilities may be operated either in parallel or in series, the series operation being designed for use during possible turbid water conditions, at which times the first basin will act as a turbidity remover and the second for softening.

After leaving the clarifiers, the water passes through a carbonating basin of 30 minutes' detention period. This basin is simply a concrete basin 36 feet square by 12 feet 6 inches deep, over the bottom of which is a perforated pipe grillage consisting of ¾-inch pipe at 24-inch centers with 1/16-inch holes drilled at 24-inch centers.

After carbonation, the water passes to four filters, each with a nominal rating of 1,250,000 gallons per day at the usual water-works rating of 2 gallons per square foot per minute. The water, after being filtered, discharges into a clear well which serves simply as a suction reservoir for the high-lift pumps.

The high-lift pumping equipment consists of three units:

1 3-m.g.d. motor-driven centrifugal pumping unit
1 5-m.g.d. motor-driven centrifugal pumping unit
1 3-m.g.d. gasoline engine centrifugal pumping unit

All pumps were furnished by the DeLaval Steam Turbine Co.

The pipe line from the plant to the city consists of a single 24-inch cast iron pipe line 14 miles in length. The pipe is laid in a trench averaging 6 feet in depth. Leadite was used as a joint material. After completion of the pipe laying, pressure was turned on and careful records of seepage through the joints were made over an extended period of several weeks. The initial seepage was rapidly reduced, and when the pipe line was placed in service, the leakage was less than 90 gallons per day per mile of pipe per inch of diameter. With the three days' storage at the pumping-station in the city, it was felt that an additional pipe line would not be required for safety.

Alternate bids were taken on standard sand-cast and high-tensile cast iron pipe and reinforced concrete pipe. High-tensile pipe was selected.

Costs

The total cost of the work has been approximately $1,200,000, of which the principal construction items are:

Pumping and purification structures	$210.000
Dam and spillway	148,000
Cast iron pipe	291,920
Pipe laying	59,925
Filter equipment	32,450
Clarifiers	19,635

The construction was executed during 1929 and 1930, operations being started in April, 1930. Mark Evans, of Bloomington, is President of the water company. Taylor & Woltmann, of Bloomington, and Alvord, Burdick & Howson, of Chicago, were the engineers.

SELLING OF WARES ON SIDEWALKS PROHIBITED IN ROCKVILLE CENTER, N. Y.

OBSTRUCTION of the sidewalks of Rockville Center, N. Y., by goods, wares or merchandise has been prohibited by an ordinance which became effective September 1. The ordinance provides that:

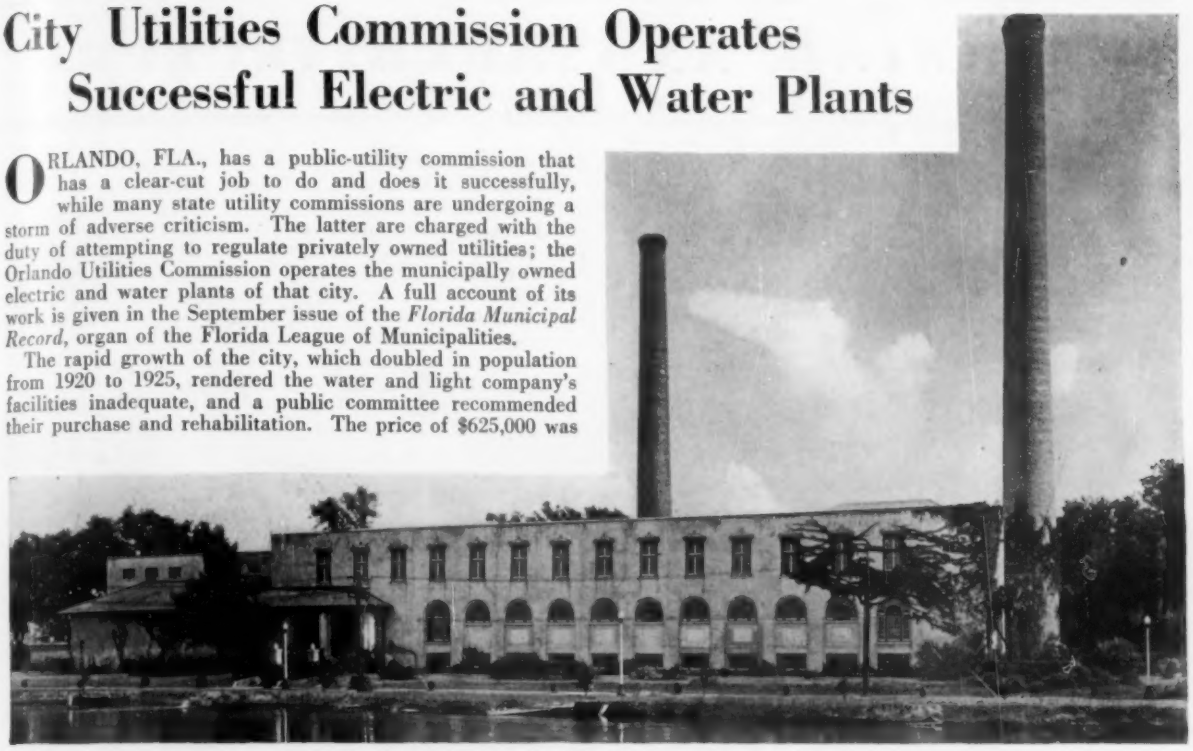
"No person, firm, association or corporation who is the owner, occupant or lessee of any premises abutting on any street, avenue or highway in the village of Rockville Center, Nassau County, N. Y., shall place, keep, permit, or suffer to be placed or kept, on any sidewalk in front of, adjoining or adjacent to such premises, any goods, wares or merchandise of any description within 10 feet of the street curb, but nothing contained in this ordinance shall prohibit persons from placing goods, wares or merchandise or household furniture on the sidewalk temporarily, while loading or unloading the same, providing it be done without unreasonable delay, and providing that such goods, wares and merchandise are not allowed or permitted to remain on said sidewalk within the prohibited area for a longer period than one hour."

Any person violating any provision of the ordinance may be fined up to $10 for each offense, and shall be declared a disorderly person.

City Utilities Commission Operates Successful Electric and Water Plants

ORLANDO, FLA., has a public-utility commission that has a clear-cut job to do and does it successfully, while many state utility commissions are undergoing a storm of adverse criticism. The latter are charged with the duty of attempting to regulate privately owned utilities; the Orlando Utilities Commission operates the municipally owned electric and water plants of that city. A full account of its work is given in the September issue of the *Florida Municipal Record*, organ of the Florida League of Municipalities.

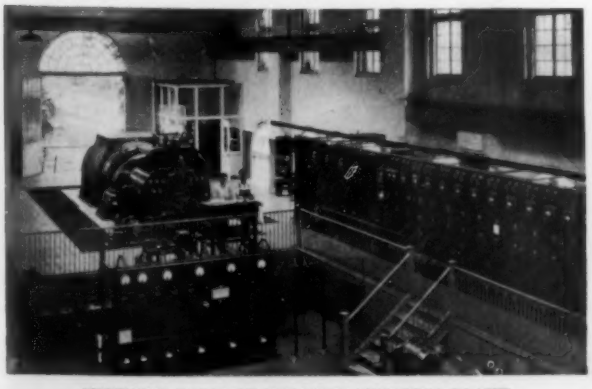
The rapid growth of the city, which doubled in population from 1920 to 1925, rendered the water and light company's facilities inadequate, and a public committee recommended their purchase and rehabilitation. The price of $625,000 was set by an appraisal board, and a bond issue of $975,000 to expand and modernize the electric and water plants was proposed. This plan was approved by the voters, and on August 25, 1922, the city took over the property. In the spring of that year an advisory Utilities Commission, consisting of the presidents of four banks and of a building and loan company, was appointed by the Mayor, and in the following year was given official status as the operating agency of the enterprise by state legislation, ratified at a special election.



THE MUNICIPAL ELECTRIC AND WATER PLANT, ORLANDO, FLA.

The members of the Orlando Utilities Commission are nominated by the Commission itself and are elected by the City Commission for a period of four years, serving without compensation. No official or employee of the city, except the mayor, who is a member ex-officio, can serve in any capacity with the Utilities Commission, and the latter has full power of hiring and discharging its employees.

The plant acquired was overloaded and out-dated, and earnings were insufficient to take care of bond interest, sinking-fund and extensions. When the Commission took charge, the new power-plant was just nearing completion. A force of experienced men familiar with modern turbo-electric plants was engaged, an up-to-date system of accounts was installed, and a technically sound rate schedule devised. The new rates represented a reduction for most of the consumers; but with the introduction of operating economies the financial results were such that by the middle of 1924 interest and sinking-fund charges had been fully met, although a second bond issue of $525,000, making the bond total $1,500,000, had been made. In May, 1928, the electric rates were reduced 10 per cent; in September of that year another 10 per cent reduction was made, and in October, 1929, further cuts were put into effect. The present maximum net rate per kwh. is 8.1c.



INTERIOR VIEW OF ORLANDO ELECTRIC PLANT

Up-to-Date Facilities

The electric plant burns oil and has four 9,000-kilowatt turbo-generators. The distribution system includes 646 miles of wire, 798 white-way lighting standards and 970 overhead street lights. About 90,000 feet of conduit and cable has recently been installed to furnish underground service to the business district. The annual output is 15,000,000 kwh., serving over 9,000 consumers.

The water-supply comes from a chain of lakes in and adjacent to the city. It passes through aerators, coagulating basins and sand filters, and is then chlorinated and pumped into the mains by three 100-horsepower electric centrifugal pumps. The quality of the water is approved by the Commission's own laboratory, the City Health Department and the State Board of Health.

In 1927, a particularly dry year, an additional lake about three miles east of the plant, containing about 1,250,000,000 gallons, was purchased, together with surrounding land for protection of the water's purity, and now constitutes the chief source of supply. A landscaped boulevard has been made.

No taxes have ever been levied for the utilities, but the Utilities Commission has assisted the City Commission on occasion by temporary loans, and, in the last two years, by contributions totaling $260,000. No bonds beyond the $1,500,000 have been issued, plant investment from earnings and reserves having been made amounting to $1,903,632.78 up to June 30, 1930, when the plant account stood at $3,403,632.78.

According to General Manager A. P. Michaels: "The worth of the plant today based upon earning capacity is around five to six millions. An adequate depreciation reserve has been set up, good dependable service has been rendered at all times—all of this with rates as low as in any city in the state."

PLANNING AND ARCHITECTURE

PLANNING FOR SIGHTLINESS AND CONVENIENCE

Two state highways intersecting at Cameron, Mo., as above illustrated, form a double "Y." Through activities of local civic organizations, the four irregular areas thus formed have been landscaped and planted in petunias—a move which has inspired a widespread program of street and home planting in Cameron

The Civic Center of Medford, Ore. (below), is but one of the active elements of the city plan for which Jacob L. Crane, Jr., of Chicago, is consultant, and which has a number of exceptional features. One of these is a scenic parkway completely encircling the town and lying along the foothills of the mountains. Another is a beautiful cone-shaped mountain, 2,500 feet high, overlooking the town, which is being acquired as a city and state park

MODERN ARCHITECTURE ON THE PACIFIC COAST

The Green Lake Field House, Seattle, Wash. (above), is but one of a group of new recreation buildings in that city,—all distinguished for the modernness of their planning and for their efficient layout. They have all been designed by the Park Department staff.

The new public library in Los Angeles, shown below, is thoroughly in keeping, in the matter of exterior design, with other new public buildings of that city, of which there are a substantial number.

Facilitating Traffic Flow at Street and Highway Intersections

By ERNEST P. GOODRICH
Consulting Engineer,
New York City

FREE-MOVING traffic on a good pavement which is substantially straight, without intersections, can move at speeds which are limited only by the capacity of the individual automobile and the skill of the driver. When, however, such a vehicle is called upon to negotiate a curve or turn a corner, a very distinct limitation is placed upon the speed. This is due to the action of centrifugal force, which causes skidding and unpleasant sensation to passengers, unless the curves are properly banked. Obviously, banking is impossible at intersections. Congestion adds to the difficulty at such points. To facilitate traffic flow at these points, intersections and congestion should be reduced to a minimum.

There are two primary ways to reduce the delays incident to intersections. One is to remove the obstructions created by the intersection, and the other is to control the traffic flowing through the intersection. The first method involves such major improvements in the street system itself as the building of ring boulevards, the separation of grades, the widening of intersections, etc. With an ordinarily good intersection, this is necessary only after traffic volume reaches 2,400 vehicles per hour. The second method calls for traffic officers, traffic signals, and such artificial means of control. With the first method, traffic approaches more nearly the ideal of self-direction; that is, with no artificial control. Naturally, such self-directed systems lead to a continuous flow of traffic from origin to destination.

Obviously, the best way to reduce congestion and control at an intersection to the absolute minimum, zero, is to avoid the intersection. This may be done in at least four ways.

Ways of Avoiding Intersections

One way of avoiding the intersection is by ring boulevards. A boulevard is built around the intersection with a radius of several blocks, using existing streets as much as possible, widening them and reducing the corners at the turns to arcs of a circle. Such a boulevard will thus carry all the traffic which ordinarily would go through the intersection, and the only traffic at the intersection would consist of that having as its destination the territory in the blocks immediately adjoining that point.

A second way is to separate the grades at the intersection. At the ordinary city intersection such a separation must be absolute and no way be provided for going from one level to another, since there is no room in the intersection to permit the building of ramps. Where one of the intersecting streets is so wide that only part of the roadway is required to carry all the traffic flowing straight through, that part of it may be either depressed or elevated to separate it from the street at right angles. The remaining part of the roadway remains at the same level as the cross street and is used by vehicles making left or right turns. At intersections with heavy traffic where there is available all the land necessary, a system of curved roadways has been employed whereby traffic may flow in any direction without crossing the lane of traffic moving in any other direction. A very good example of this last type of grade separation is that at Rahway, N. J., where the New York-Philadelphia road intersects the road through Rahway to the shore resorts.

The third way is by using rotary traffic circles with a sufficiently large radius to permit the weaving of the cars from the cross streets into and across the main line traffic flow.

The fourth way is the "steadyflow" system being developed by Fritz Malcher.*

Segregating Vehicle Types

Where congestion is created by vehicles of various types, the segregation of the types presents a method which might be used more often to advantage. The more slowly moving vehicles always delay the traffic flow of the faster ones, and by dispersing traffic through several intersections, the over-all speed of the faster vehicles is increased considerably. Many communities have such a segregated system for certain types of vehicles. For instance, heavy trucks are prohibited on many streets designed purely for passenger vehicles. This system could be carried out further by segregating the street cars and the passenger vehicles, each type using a different street, thus reducing the congestion at intersections and increasing the speed of the faster vehicles.

Improving the Intersection

Where none of the solutions given above is applicable, an intersection may be improved by enlarging it in various ways. The sidewalk on the near corner may be cut back for a distance of about fifty feet to allow for more lanes of traffic at the intersection. No parking should be allowed in this reservoir, and it can be used to excellent advantage by cars which are to make right turns. This leaves the entire original width for traffic moving straight ahead or making left turns, if these are permitted at the particular intersection.

The intersection may be enlarged and a rotary traffic circle constructed. Where this is done, care should be taken to make the radius large enough so that the traffic entering from the straight roadways will not have to greatly decrease its speed and the passengers will not feel unpleasant sensations. The roadway of the circle should be wide enough to care for the traffic entering from both the main line and the cross streets. This is particularly important if the cross-street traffic is heavy enough to cause interruption to the continuous flow of the main-line street traffic, for at the point of leaving the circle by the main-line traffic the cross-street traffic will continue across the entrance of the main street and around the rest of the circle. Where the roadway is not wide enough to permit of continuous movement, obstructions will be created by the cross traffic at the two points where the main line enters and leaves the traffic circle, increasing the number of con-

* See THE AMERICAN CITY, August, 1930, page 107, for an article by Mr. Malcher describing this system.

gested intersections and consequent delays to the main-line traffic. If the radius of the circle is not large enough, the speed of the traffic will have to be materially decreased, and the circle will develop into a decided liability and drawback in the traffic system.

The One-Way Street Method

The use of one-way streets throughout an entire street system does away entirely with intersection of vehicular traffic. In such a system the important parallel streets are one-way streets, in each one the traffic moving in the opposite direction to the contiguous streets. The cross streets are also one-way streets, but the traffic in each block within the same street moves in the opposite direction to that in the following and preceding blocks. Traffic moving on any street, therefore, may never cross a street in which traffic is moving in a direction at right angles to it. The length of trip for any vehicle having to cross the city via the cross streets in such a one-way system will be increased, but the delays incident to intersections will be so lessened that the time for the trip will probably be less than if such a system were not used. The only stops at intersections will be those required to permit pedestrian traffic to cross the intersections.

A traffic system using both this type of one-way streets and variations of the traffic rotary circle has been developed into what is called the "steadyflow" traffic system.

A variation of the above is found in the traffic plan wherein every street is a one-way thoroughfare, traffic moving in the same direction for the entire length of the street. This plan does not avoid traffic intersections, but where streets are narrow it expedites the traffic flow through such intersections, because only one cross stream has to be negotiated. In this system the parallel streets alternate in direction.

In neither of the one-way-street methods of facilitating traffic flow is alteration of the street system necessary. In the former no artificial control is required and traffic moves continuously. In the latter case control is necessary to stop traffic on one street so that the traffic on the cross street may proceed.

The Traffic Officer and the Traffic Signal

When traffic volume passes the 1,200 vehicles per hour per lane mark, artificial control is necessary and one of various methods may be chosen. This control ranges from the periodic regulation by a traffic officer to the continuous progressive system of traffic lights having central control. Officer control is efficient and economical when it is required only periodically, such as during morning and evening rush hours, or during certain days of the week. At other intersections where control is necessary continuously during the day, and during the day and a portion of the night, a traffic officer, if present, should be only an assistant to the traffic signal, and should not control it. He is there to see that the signal is obeyed.

The traffic signal should be a part of a city-wide, or district-wide system and should be operated centrally for the entire city or district. Traffic signal systems are operated according to different plans, and are of two classes, automatic and demand. In the automatic system all the lights are so connected that they are operated centrally and either the cycles are set according to a definite program or they may be varied from headquarters to meet varying conditions. The synchronous system, wherein all the lights on the same street are of the same color at the same time, is very wasteful of the traffic's time. All the traffic on a street must stop at the same time, and move at the same time. There will naturally be many intersections, particularly in certain districts, which have very little cross traffic during some part of the day. This is not taken into consideration in the synchronous system. That portion of the cycle which causes the traffic to stop will represent the portion of the total driving time which the traffic will lose in the synchronous system.

In the progressive system of traffic lights, the traffic, in groups of cars, moves continuously the whole length of the street. This is done by having the lights turn on "Go" just as every group of cars reaches an intersection. Where blocks are of varying lengths, this fact must be taken into consideration in developing the progressive system. With a central control this is possible. The varying conditions of traffic density throughout the day or night can also be taken into account, and the cycle lengths changed to meet them and to keep traffic flowing continuously at a predetermined speed. If the cross traffic is regulated in the same way, the intersection is kept free of congestion, which is not possible with the synchronous system.

In the old demand type of traffic signal, each light is operated separately by an officer, in accordance with the traffic conditions at each particular intersection. In this case, the light simply takes the place of the officer's hands, or of his semaphore.

The Traffic-operated Signal

A new type of demand signal is that which is operated automatically by the traffic itself. Such signals have been built on the photo-electric principle, so that when a car moves over the cell, thus cutting out the illumination to it, an electric contact is made which turns the traffic signal into "Go" for that vehicle. The traffic signals are nevertheless on a predetermined cycle, so that after the lapse of a certain amount of time the signal changes, whether there is still traffic coming over the photo-electric cell or not. This takes care of pedestrian traffic, and of traffic which does not go over the cell.

Several other devices are actually on the market. One such, designed for the benefit of pedestrians, is operated by a push-button on a post at the curb. The pedestrian presses a button and the traffic light changes to "Go" in his direction of travel. Other devices designed primarily for vehicles are actuated electro-magnetically by the passage of a car over a solenoid underneath the pavement, and by the effect of the weight of the car pressing on a sensitive plate which thereby makes an electric contact. A very ingenious system of relays which are brought into action by several of these systems can provide longer or shorter intervals, depending upon the number of contacts and can be arranged to control the traffic which issues from multiple intersections.

Some Intersections Should Be Superseded

Where it is impossible to reduce the congestion at an intersection, as at a complicated intersection composed of three or more streets, the best thing to do is to discard the existing crossing and lay out a new one. If the intersection is large enough, the area where the streets actually cross may be used for a park, and the new intersection would be, in effect, a traffic circle. Where this is not possible, the entire intersection should be abandoned and

new streets cut joining the diagonal streets at least half a block from the original intersection. This new street system would then be similar to that employing ring boulevards.

Each situation is a problem in itself and should be studied by the use of sound engineering methods. That solution should be adopted which is the most efficient and economic. A solution which has these characteristics in an outlying area might be entirely improper for one in the center of the community. Similarly, the amount, character, and direction of traffic at any intersection has a direct bearing upon the problem. Good engineering is the only panacea, if it may be called such.

ACKNOWLEDGMENT.—The foregoing paper was presented before the American Society for Municipal Improvements at the Convention held in Richmond, Va., October 13-17, 1930.

Cutting Corners in Coronado

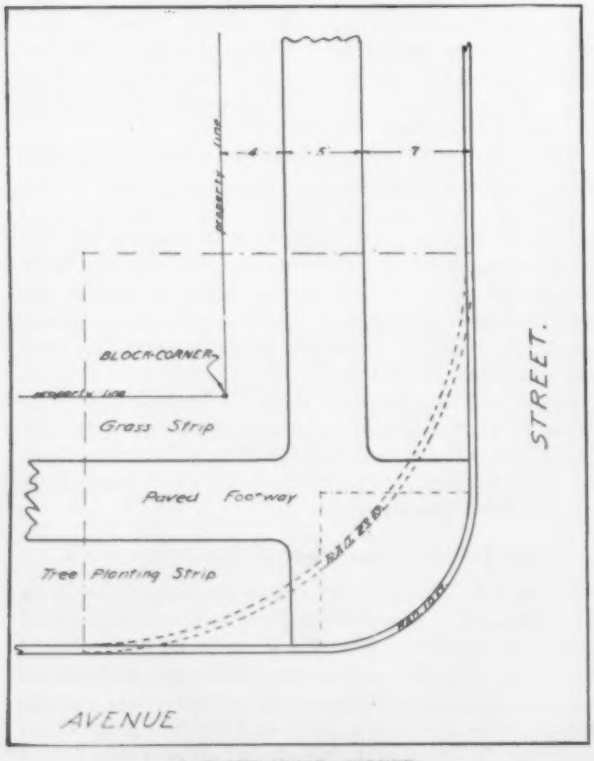
By **W. W. CROSBY**
Coronado, California

CUTTING corners may or may not be wise. It all depends. However, the inconvenience and danger to traffic of some of the street corner curbing in Coronado have led the Planning Commission of that city to recommend an eventual readjustment of the corner curbing generally. At 440 of the 650 street corners in Coronado are 10-foot radius arcs connecting the curb tangents 90 degrees apart in direction.

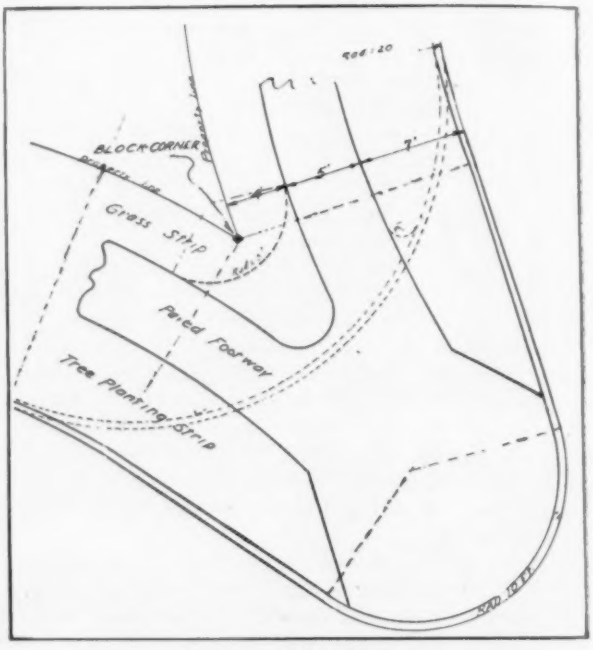
A portion of Coronado, outside of the rectangularly platted section, is laid out with curving streets. Some of the intersections are particularly dangerous because of the acute angles to some of the blocks and, further, because the curb lines are often prolonged until the standard 10-foot-radius arc will connect them.

Automobile traffic when rounding the corners in these cases is thrown well over into the opposite traffic lanes even when the normal speed is reduced to a minimum.

The Coronado City Planning Commission, therefore, after careful consideration of the costs involved, passed, on June 3, 1930, a resolution calling the attention of the Coronado City Council to the matter and recommending to the Council that an item of $1,000 be included in the city budget for 1930-31 for an immediate start on this work. The intention is that, unless insuperable obstacles develop, the work shall be provided for and continued yearly as may be advisable until it shall be completed.



A RIGHT-ANGLE CORNER
This shows a typical sidewalk and curb return with the proposed improvement in dotted lines



AN ACUTE-ANGLE CORNER
Showing the proposed increased curb location in dotted lines

Owing to the established cross-section of the Coronado streets, but little if any property damage need be involved in the curb changing. The typical street is 80 feet between property lines, and the building lines, except in the business zone, are set back 25 feet more on each side. The 80-foot street right-of-way is divided symmetrically into: two grass strips, each 4 feet wide, next to the property lines; two sidewalks each 5 feet wide; two tree-planting strips each 7 feet wide; and a 48-foot roadway.

As will be seen by the diagram at the left, it is therefore easily possible to set the curb circle back to a 25-foot radius in all the rectangular blocks without disturbing the main walks or planting strips. The end is also accomplished even at the acute corners without intruding on the private properties, though the walks and planting strips may have to be adjusted slightly in a few cases. The benefits in these cases will be appreciable.

The President's Housing Conference—

A Challenging Opportunity

By CLARENCE S. STEIN, A. I. A.

AFTER a decade of tremendous activity, the housing business is again in the dumps. Now the leaders of the industry have time to consider the results of their work. So the President has called a Conference on Home Building and Home Ownership to make a national inquiry into the housing experience of the past years, "with a view to a summation of this experience, the mobilization of existing movements and the possible development from it of a new state of thought and action."

The President's Conference has a great opportunity for leadership. If it should develop simpler and easier systems of financing individual houses, it would make an important contribution. But it would not strike at the essential problem. It is not more houses that we need. It is houses and communities worth living in. The basic problem is to reorganize the industry for the economical production and development of planned and orderly-built communities.

Housing, an Increasing Municipal Responsibility

As emphasized in the accompanying article, the fundamental housing problem in the United States today is not mere increase in the number of houses, but the planning and building of houses and communities worth living in.

As Mr. Stein points out, the Conference on Home Building and Home Ownership, recently appointed by President Hoover, has a challenging opportunity to mobilize public thought and stimulate action which will lead to much-needed improvements (a) in methods of construction, (b) in group and site planning, and (c) in the relationship of the lending institutions to the house-building industry. The author shows that municipalities have the opportunity; to prevent the subdivision and sale of land which lacks adequate roads and public utilities; and, above all, to enforce an orderly, economical development of the city and the surrounding region.

When building started up again ten years ago, there was great hope for a better day for housing. All the civilized world had come to a realization of the important relation between home and community life and industrial efficiency and social progress. We had behind us the war-time experience of building planned communities. There was the need of a complete revolution in house and community planning to meet the requirements of a new age. All other industries were undergoing reorganization based on mechanized mass production. There was an insufficient number of houses in almost every part of the country. There was immense wealth, broadly distributed; so there were vast sums of money to be spent on houses.

Ten years have passed. When the President's Conference looks back over this period of stupendous production of houses, how will it sum up the experience?

Whereas there was a housing famine ten years ago, there is now a surplus in most parts of the country. So it is not a problem of quantity that they have to meet; it is one of quality, distribution and organization.

Home ownership has greatly increased. This is due to the broad distribution of wealth during this period, augmented by the propaganda of the "Own Your Own Home" movement. The Conference will probably consider the defects as well as the advantages of home ownership. Here, again, the principal factor to be kept in mind is not quantity but quality. Certainly the ownership of poorly built houses inadequately served by public utilities and roads and badly placed in relation to neighboring houses or places of work and recreation does not lead to better citizenship nor to the creation of contented workers. Quite the contrary.

Construction

The industry is organized as a retail business. In spite of the vast number of houses erected in every part of the country, there has been large-scale production in only exceptional locations. Even in these cases, few have taken advantage of the architectural opportunities of grouping for appearance or preservation of light, outlook or open spaces. Similar houses have been placed in endless lines like soldiers on parade. Miles of identical ugly boxes spaced close to each other—dangerously close. Free-standing individual houses with no individuality and no privacy. As a result of the small-scale methods of production, housing has been practically unaffected by the great decade of industrial standardization and mechanization.

The standard of construction as a whole has been lower than before the war. There has been actual progress in the design and construction of all the mechanical equipment of the kitchen, bathroom and furnace room—that portion of the house made and assembled in the factory; but the shell itself, that which is put together by craftsmen on the job, shows practically no technical progress. Except in a few instances, the important problems of fire resistance and insulation against heat and cold are met no better than before. Wood is still the principal material used for the exterior of houses, in spite of fire hazards and its tendency to deteriorate rapidly. An astoundingly large portion of the houses have been jerry-built by ignorant or irresponsible builders. It is questionable whether they will be worth very much by the time the second mortgages have been paid off and the houses belong 100 per cent to the purchasers.

Group and Site Planning

Houses have been placed without any regard to the best use of the site or the preservation of open spaces or the

requirements of safety. They have been located without any relation to neighboring houses or the necessity for outlook, light and ventilation. Traditional systems of land subdivision without relation to actual use, as well as the typical municipal regulations, lead to the building of monotonous rows and make it practically impossible to group houses so as to secure beauty or to obtain the maximum advantages of vista and privacy.

Buggy Thinking in the Motor Age

Streets and lots have been laid out in a manner appropriate to the days of the buggy. Obsolete methods have been followed, with very few exceptions, in spite of the apparent need of new types of town planning for residential sections to meet the requirements of use of the automobile and the growing demand for peaceful escape from the dangers, noises and odors of traffic highways.

Small and unrelated lots have been sold in much larger quantity than could be used for decades to come. This has led to the breaking-up of farms long before it was necessary. It has fixed the mold of the future development of our cities in regard to street layouts, which in most cases will be obsolete before they are used. It has made future economical large-scale development of these sections difficult if not impossible. This pattern can be changed only at vast expense and much labor, by repurchase of individual lots. Most of these developments have been subdivided according to methods that neither lend themselves to economical equipment with public utilities nor are in accordance with more advanced practices in relation to community living in the age of the automobile.

Most subdivisions in which lots and even houses have been sold have been incompletely equipped with roads and utilities. The lots have to a great extent been sold to those who have no understanding of the complete costs they will have to meet in future, not only for the upkeep of the house but for assessments for roads, utilities and other improvements, as well as taxes.

Subdivisions have been located in accordance with the whim of the speculator, rather than in relation to sound economic development of the community or the region of which they form a part. As a result, there is a chaotic relation between the location of industry and the homes of workers. Municipalities have been put to vast expense, or more often have borrowed on the future, for transportation systems to connect the two. While millions are being spent in laying out and building endless miles of new streets mostly of a temporary nature, with inadequate public utilities, old residential sections which have good roads and adequate public utilities are being depopulated. It is true that the old houses are obsolete. But many of the new sections are so badly planned, built and equipped with utilities that they will probably soon degenerate into worse slums.

Financing

The lending institutions hold the key position in the house-building industry. It is their loans that make housing possible. It is their final say which decides what houses shall be built. In short, they are the real leaders of this chaotic industry. Only a few of the larger lending organizations have an efficient architectural or engineering staff to examine plans or construction of houses on which they lend. Loans have been made without reference to:

1. The quality of house construction.
2. The type of construction organization. In or near large communities it would unquestionably be more effective socially, as well as financially safer, to lend on a large-scale operation of a reliable building organization having an efficient technical staff, instead of on small units or individual houses.
3. The ability of purchasers to meet all the costs of future assessments, taxes and upkeep.
4. The future character of the neighborhood as affecting the value of the house. After all, the obsolescence that affects values in housing is more often that of the neighborhood than of the individual house.
5. The needs of municipal growth. New developments have often been placed inconveniently at a distance from industries, schools, stores, existing roads, sewers or fire protection. They require unnecessarily large and wasteful municipal investments, as well as waste of time, capital and energy of those who buy or rent in the new developments.

Regulations

Large portions of the country have inadequate regulation of construction or subdivisions. On the other hand, where legal restrictions have been made so stringent that those of moderate means cannot afford new homes, there has been a tendency to escape to the unregulated areas around the rims of these municipalities. Here there are no regulations, and taxes are low. These sections will ultimately have to be taken over by the city. They are being built up without plan. Because of their lack of sanitary facilities, they are a constant danger to the health of the community. They will quickly degenerate into slums that will have to be wiped out at vast expense.

There is an equally dangerous tendency to set legal standards which, although they may seem desirable to cure evils inherent in our usual method of premature land subdivision, are likely to prevent the development of large-scale planning and coordinated building.

The Mobilization of Existing Movements

Although the permanent value of most of our experience of the last ten years is meager, there have been movements which have prepared the way for a new state of thought and action. Such are the large-scale operations which have been carried out by a limited number of progressive builders and by organizations actuated by a desire for public service rather than immediate profit. A number of these operations have consisted of groups of apartment houses, financed and executed by insurance companies or foundations such as the Rockefeller, Rosenwald, and Marshall Field. In addition to showing the economic advantages of large-scale building, they have preserved large concentrated open spaces and have formed communities. The City Housing Corporation has gone even further at Sunnyside in building a well-knit community of both individual houses and apartments for twelve hundred families. These developments have been part of existing cities. At Mariemont and Radburn a further step has been taken in planning complete new communities. The importance of Radburn lies not only in the fact that a limited dividend organization is successfully producing well-constructed houses that compete with the jerry-built products; that it is carrying out large-scale operations directed by trained technicians; that it is building orderly planned communities in which every house is placed not only so as

to secure for itself the best possible advantage of its location, but where it forms a related part of group and community. Above all, it is important because at Radburn town planning has been based on the needs of today, this age of the motor and of increasing leisure time. A few progressive large-scale operators in other parts of the country are paying Radburn the compliment of imitation.

During the past decade there have been signs of a change in public opinion as to the function of government in regard to housing. Some people realize that restriction is insufficient. At least New York State has assumed active responsibility for both state and municipality by offering financial assistance in the form of tax exemption to limited-dividend companies which construct good houses at low rentals.

A New State of Thought and Action

This summation of the experience of the past ten years would lead to the conclusion that the primary defect of most housing activity has been the building of desultory unrelated individual houses instead of homogeneous communities.

On the basis of this misdirected activity, a program for the future might be outlined.

1. The development of our cities must be carefully planned in advance so as to care for the future growth of population in an orderly, economical way. Only so can we minimize the cost of roads, public utilities and transportation.

2. We must in future build communities, not unrelated desultorily placed houses.

3. These communities must consist of carefully related units, each placed so as to secure the maximum of vista, sunlight and privacy, and be organized so that they will at the same time form part of a harmonious and beautiful group.

4. Each development should be planned and built as a single operation with complete installation of paving, sewers and other utilities.

The suggestion of large-scale development does not solve the problem of all the small cities and villages. It is, however, applicable to the housing production of such a large portion of the country that it would seem to me that the emphasis of the President's Housing Conference should be placed on it rather than on individual home ownership or financing.

How bring about a new state of thought and action? This cannot be done merely by educating the general public. It is not they who control the situation. It is the lending institutions, the municipal governments and the land subdividers and builders. The two latter groups can, on the basis of past experience in this country and abroad, be shown the advantage of more economical methods of land subdivision and house grouping than those now commonly used. The development of more organizations for large-scale planning and construction should lead not only to more economical production, but should give opportunities for much-needed research into the better use of materials and new structural methods.

The municipalities can prevent short-lived and dangerous construction. They can prevent the subdivision and sale of land which lacks adequate roads and public utilities. But, above all, they can enforce an orderly, economical development of the city and surrounding region, so that only as much land as is really needed and can be immediately supplied with adequate community facilities is opened up for housing purposes.

The lending institutions can do more than any other group to prevent a continuation of past housing follies. It is merely a question of where they place their loans. They should finance only those houses which are economically planned in relation not only to the internal functions of the house but also to its surroundings. They should lend only on soundly built houses, and preferably on those which form part of a large-scale operation, or those located where the immediate completion of the building of the neighborhod is reasonably assured. And they should insist that the houses be part of a well-planned community, equipped with necessary roads, utilities and recreational and community facilities, because it is the obsolescence of a neighborhood much more than the obsolescence of an individual house that depreciates not only social but financial values.

Nacos Convention—New Officers, Directors and Service Ideas

AT the 16th annual meeting of the National Association of Commercial Organization Secretaries, held in Tulsa, Okla., October 19-22, William J. Russell, Executive Vice-President of the Chamber of Commerce of the Borough of Queens, New York City, was elected President, succeeding A. S. Dudley, Secretary-Manager of the Chamber of Commerce of Sacramento, Calif. Gerrish Gassaway, Secretary of the Chamber of Commerce of Wilmington, Del., who has been Second Vice-President during the past year, will fill the position of Secretary-Treasurer of the organization, vacated by Mr. Russell. The new Board of Directors includes, besides Mr. Russell and Mr. Gassaway, C. M. Anderson, Executive Vice-President of the Memphis, Tenn., Chamber of Commerce; H. J. Bell, Executive Director of the Milwaukee, Wis., Association of Commerce; L. B. Crawford, Secretary, Winfield, Kans., Chamber of Commerce; J. F. Ferguson, Secretary, Chamber of Commerce, New Haven, Conn.; J. H. Hott, Manager, Fort Worth, Texas, Association of Commerce; A. J. Horn, Secretary, Chamber of Commerce, Toledo, Ohio; Valentine Saxby, Secretary, Chamber of Commerce, Duluth, Minn.; Christy Thomas, General Manager, Chamber of Commerce, Seattle; and C. C. Lydick, Sec., Moline, Ill., Association of Commerce.

The Service Idea Contest, successfully inaugurated last year, was continued by the awarding of prizes to Ford C. Harper, Secretary, Chamber of Commerce, Shawnee, Okla., F. W. Mathias, Secretary, Chamber of Commerce, Hoquiam, Wash., and Brady L. Webster, Secretary, Chamber of Commerce, Fort Stockton, Texas. The first prize of $100 was awarded to Mr. Harper for a plan for relief from oil-contaminated water. Mr. Mathias won $50 for the Service Idea which enabled his city to obtain a better and adequate water-supply. The establishment of the first county park in Texas won third prize ($25) for Mr. Webster. Fourth place was awarded to C. M. Sreenan, Assistant Secretary, Board of Commerce, Detroit, Mich., for submitting "Getting Federal Building in Right Place." The following also placed: R. P. Dolan, Secretary, Chamber of Commerce, Greenfield, Mass., for "Jobs for the Jobless—$130,000 Return"; Don Foster, Secretary, Chamber of Commerce, Coffeyville, Kans., for "Development of Dairy Industry"; George J. Clautice, Secretary, Chamber of Commerce, Baltimore, Md., for "Bringing Industry Closer to the Schools"; A. H. Andrews, Executive Vice-President, Hudson County Chamber of Commerce, Union City, N. J., for "Women Organized to Receive Newcomers"; J. F. Stichman, Secretary, Chamber of Commerce, Independence, Kans., for "Organize Bank to Replace One Failed"; and Thad. A. Stevenson, Secretary of the Tacoma Chamber, for "Development of Sheep Industry."

EXTERIOR OF PATERSON, N. J., INCINERATOR

The History of Municipal Refuse Incineration in Paterson, N. J.

By **W. W. CONNER**
Supervising Engineer,
City Refuse Incinerator

DURING the years preceding the installation of the first municipal refuse disposal plant in 1912 by the city of Paterson, N. J., all garbage and refuse was carted to the public dumps, where it was deposited in the open to decay. Some of the refuse was ignited and partly consumed, which resulted in a continuous pall of smoke hovering over the adjacent sections of the city. The decaying material gave off a repugnant smell, and the dumps were found to be a prolific breeding-place for rats, flies and mosquitoes, which spread disease germs throughout the community. Children searching for discarded trinkets, of real or imaginary value, would frequent them, and many common disease germs gathered on their shoes were scattered throughout the streets, homes and schools. The unsightly appearance of the dumps, as observed by persons passing through the city, must have left a very unfavorable impression.

As the city became more densely populated, and the suburban districts in the immediate vicinity developed, complaints and injunctions made it necessary to abandon some of the dumping-places. It was realized that, as the city was restricted geographically, with no available dumping-grounds in the outlying districts, other means of disposing of the wastes must be worked out. With a full realization of these conditions, a broad policy was inaugurated at that time which included, not only a modern incinerator, but an improved sewage system and a well-organized health department. Each has contributed its share in making Paterson one of the most sanitary and healthful cities in the country, having a mortality rate of but 51.3 per 1,000.

The First Incinerator

In the year 1912, an incinerator of 60 tons daily capacity was constructed and put into operation. At that time few cities the size of Paterson had taken this progressive step, which was looked upon by many as an experiment. This plant, which was of the Heenan mechanically operated type, was housed in a substantially constructed building, and after eighteen years of continuous service, excepting short periods for overhauling, it is in good physical condition, with an incinerating capacity in excess of its original guaranteed capacity. It was equipped with an air preheater, mechanically operated grates and an ash-discharging device. The gases from the furnaces passed through a 300-hp. boiler which supplied steam to operate the turbo-generators and other plant equipment.

The total cost of the initial plant, including building, equipment and site, was approximately $100,000, or $0.833 per capita at that time. When the practice of delivering garbage to the city dumps was abandoned, the immediate increase in property values was greatly in excess of the cost of the incinerator.

The site of the original plant was unwisely chosen, as the rapid growth of the city was not anticipated at that time. The residential section has since extended to within a block of its location, and many complaints were made by nearby residents due to dust, smoke and offensive odors that were at times unavoidably present.

The New Incinerator

The original plant being of insufficient capacity to meet the city's requirements, a new incinerator of the improved Heenan type, with a daily capacity of 200 tons, was completed and put into operation during the summer of 1929. It presents an imposing structure substantially built, with pleasing architectural design and is situated adjacent to the original plant. As the continued use of the original plant was desired, it was decided to locate the new one adjacent to it rather than at a more remote point, which would otherwise have been selected. The location in a residen-

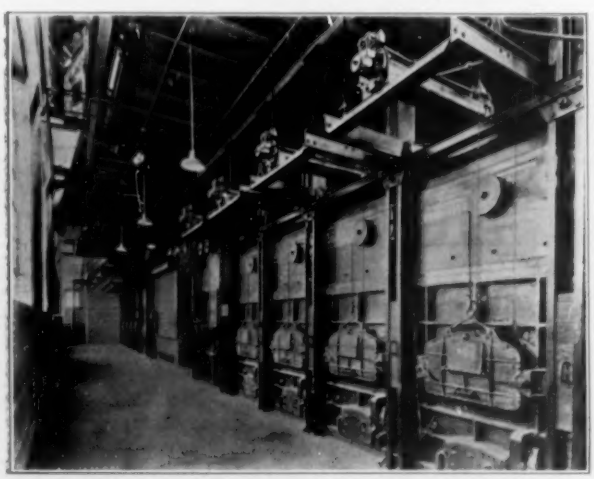
CHARGING FLOOR OF THE INCINERATOR

tial section necessitated the incorporation of every appurtenance required to eliminate noise, smoke, dust and odors that are common, to some extent, to all incinerators. The location did, however, have its advantages. As it was near the geographic center of the city, the hauling distance was shorter and the expense of delivery to the plant was much less.

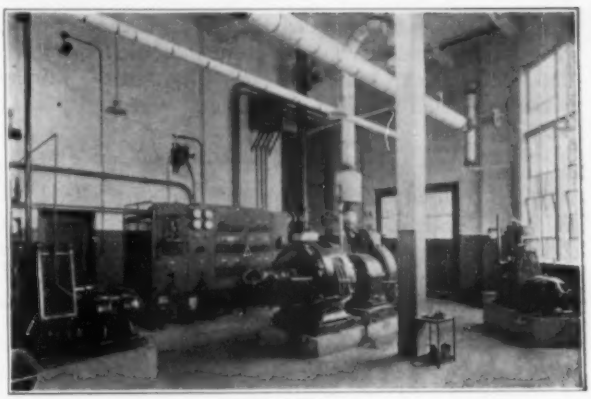
The receiving-pits into which all material collected is unloaded, are tightly inclosed by mechanically operated rolling steel doors, and there is a ventilating system having a capacity of 75,000 cubic feet of air per minute which draws air from the pits and building, and exhausts through an air washer and chlorinating system, where all dust and objectionable odors are eliminated. The pits are emptied, flushed out and disinfected each day. When odor is perceptibly present, chlorine gas at the rate of from 14 to 20 pounds per 24 hours is required. The furnace air is drawn from the ash tunnel and other parts of the building requiring ventilation, and is forced through the preheaters, where the temperature is raised to the desired degree. The constant ingress of air due to the operation of these exhaust fans prevents dust, smoke or odors from leaving the building except through the exhaust stack located on the roof.

Collection

The city's waste, consisting of mixed garbage and refuse, is collected between the hours of 7 A. M and 3 P. M. by city trucks, also by privately owned trucks and market wagons, and is dumped into the receiving-pits, which have a holding capacity of approximately 75 tons. It is elevated to the charging floors by electrically operated cranes and grab-buckets, where provision is made for separating rags and other material of value and storing some of the more combustible refuse required to maintain furnace temperatures during excessively wet weather. No purchased fuel is required at any time. During periods following heavy rain or snow, it is necessary to fire some of the drier refuse until the furnace refractories are brought up to a high temperature, after which the excessive moisture content is evaporated by the radiant heat of the furnace walls, and combustion is not seriously affected by moisture. When the material is excessively wet, the furnace air is preheated to about 350 degrees F. above



THE STOKING FLOOR OF THE EIGHT FURNACES AT THE NEW PLANT



THE ENGINE ROOM

the room temperature, which also tends to dry out the material and aid combustion. A temperature of from 1,600 to 2,200 degrees F. is maintained within the incinerated furnaces, which completely destroys smoke and objectionable odors.

Paterson has a population of approximately 140,000 inhabitants. During the late spring, summer and early fall seasons, a daily average of 160 tons of mixed garbage and refuse is collected, but during the remainder of the year the yield is about 50 per cent less. Collections, under the supervision of the Street Department, are made throughout the densely populated residential and commercial sections of the city three times during the week in summer and twice weekly during the remainder of the year. Two collections are made weekly in other districts. Fifteen 5-ton trucks and ten dump-wagons are required to collect the city's refuse, garbage and ashes. A number of 2-ton trucks, generally used for other purposes, are also available when required.

Details of the Plant

The new plant is provided with eight 1½-cubic-yard charging hoppers, which when filled are emptied upon the drying hearths within the furnaces by pneumatically operated sliding covers. A charge is dropped immediately after the previous one has been raked over upon the grates, and the ash is disposed of through a drop section of the grate. Ash and clinker are removed by means of a 12-inch pneumatic conveyor, in which a vacuum of 6 inches is maintained by a suction blower driven by a 150-horsepower motor when ash is being conveyed. In addition to a centrifugal dust separator built into the storage tank, an auxiliary separator provided with spray nozzles is used, which completely removes all dust from the air before entering the blower. Noise is practically eliminated by specially constructed muffling chambers and wood-lagged exhaust piping.

There is also an auxiliary ash-handling system for stand-by purposes consisting of a 1½-cubic-yard skip hoist which elevates the ashes to a storage bin from which they are discharged into a 7-ton truck by quick-opening gates. The non-combustible refuse, consisting of cans and wire which have passed through the furnaces, is elevated separately into a truck by a one-ton hoist. The ash tunnel is well ventilated by two 24-inch suction air ducts connected to the furnace air blowers. The hot furnace gases from the combustion chambers are baffled through a 400-horsepower high-pressure boiler which supplies steam for

heating and operating a turbo-generator and other equipment. The steaming capacity of the boiler is regulated by by-passing some of the hot gases direct to the chimney when the steam required is less than the capacity of the boiler.

Cost of Operation

The total cost of the new plant, including site, buildings and equipment, also the rehabilitation of the original plant, represented an expenditure of $4.33 per capita of the city's population at the time it was constructed, and the total annual operating expense, including supervision, labor and supplies is less than 45 cents per capita.

All of the plant equipment has functioned satisfactorily and there have been no complaints from near-by residents, which would indicate that it is feasible to locate incinerators in the business or residential section of a city when it is desired to do so. The seemingly excessive first cost of the plant has been justified by the eradication of objectionable features.

The operation of the plant is directed by the supervising engineer in charge, who is directly responsible to the Board of Public Works. It is conducted along approved lines recognized by leading industrial plants and is free from political domination or influence.

Novel Design of Small Modern Sand Filter Sewage Treatment Plant

By JOHN G. ALBERTSON
Associate, Thomas F. Bowe, Consulting Engineer, New York City

A UNIQUE combination of units for a separate sludge digestion sand filter plant has been installed in the recently completed sewage treatment works for the township of Rochelle Park, Bergen County, N. J.

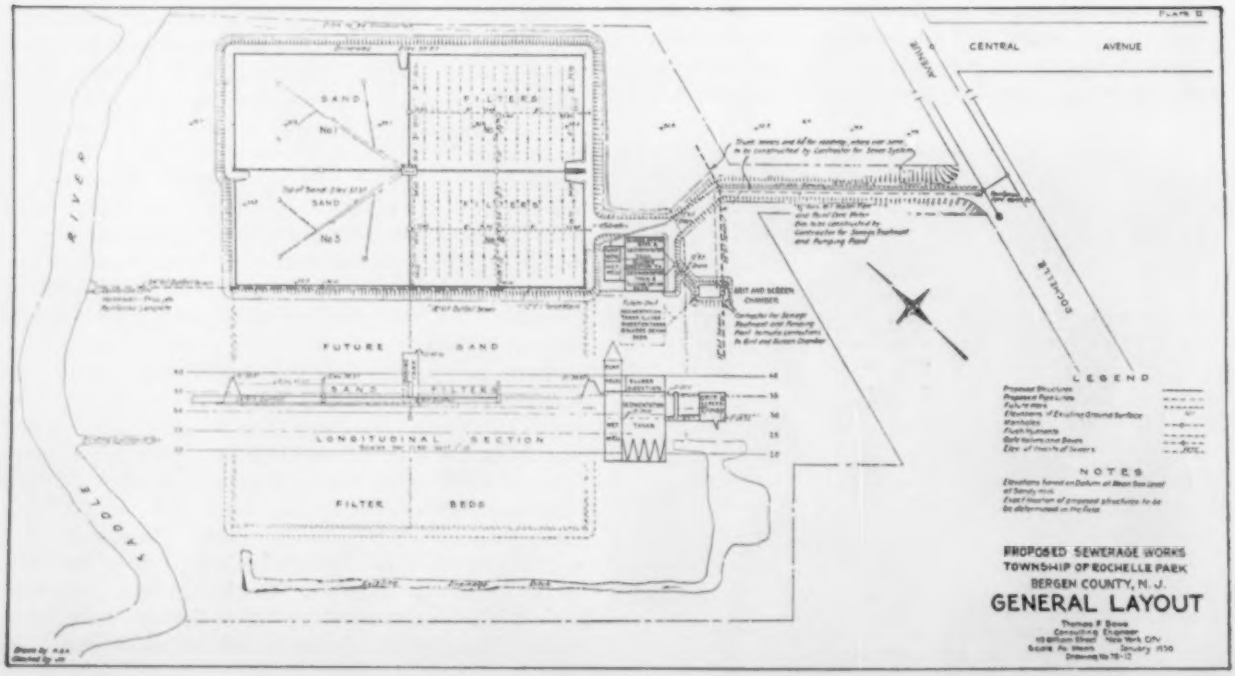
On account of the topography of the township and particularly of the site which was selected for the treatment works, the design appears well adapted. The plant location is on the Saddle River, a tributary of the Passaic River, and comes under the jurisdiction of the Passaic Valley Sewerage Commission. The character of the land adjacent to the stream is that of a wide flood plain or berm. The location chosen is in the southerly part of the municipality.

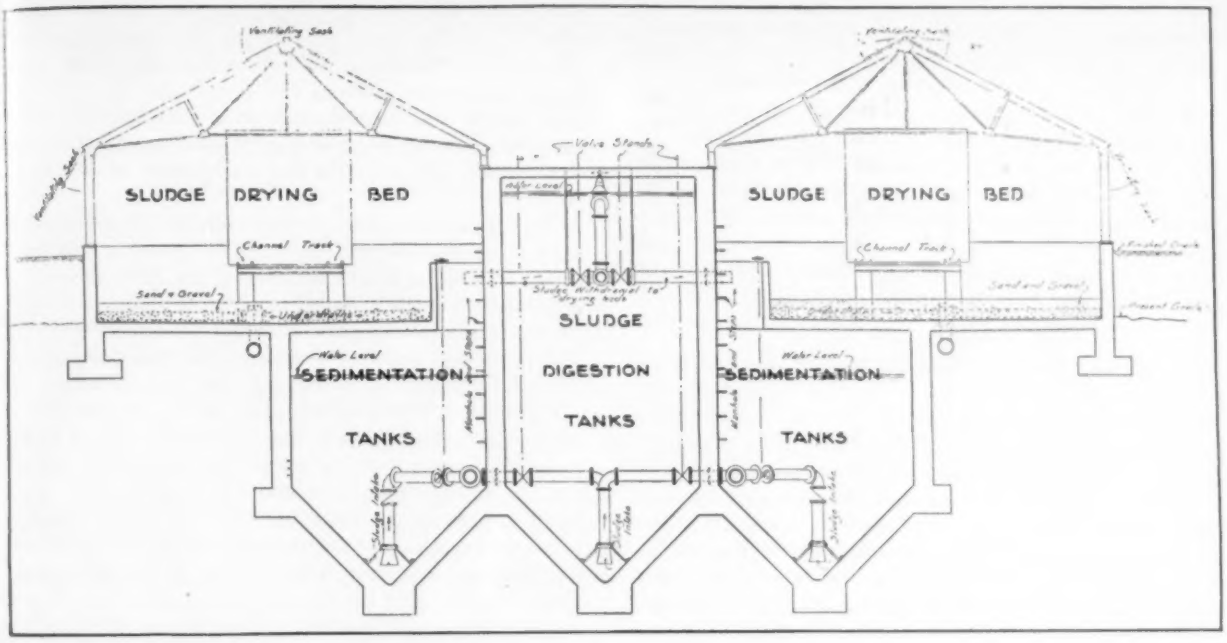
Owing to the fact that residences are in close proximity to the plant, it was necessary to properly guard against odor nuisance and to design a plant in keeping with the immediate surroundings. The requirements for the effluent were exacting, as the stream is used for bathing and boating purposes and affords but small dry-weather dilution.

Further analysis dictated the advisability of a design simple in type and semi-automatic in nature. Utilization of the activated sludge process with its technical maintenance seemed inadvisable for so small a municipality. The choice was reduced to sand filtration preceded by either an Imhoff tank or a separate sludge digestion process. The final decision was made after an economic study and was dictated by the design of the sewer system.

Sewerage

One-third of the township area is of the character previously described, a long, flat area extending northerly





along the stream. Approximately another third of the area could have been sewered by gravity flow through the works if the sewage were siphoned to the plant site. However, by routing all the flow to a trunk line constructed parallel to the river, a larger pipe size on flatter grade could be utilized and thus avoid all pumping for the low-level area except at a central point—the treatment plant.

Digestion Tank

The main trunk sewer thus reached the plant at a depth of four to five feet below the ground surface. It was considered advisable to provide settling previous to pumping. An Imhoff tank design with a suitable depth of sludge compartment proved to be too expensive because of the excessive excavation which would be involved. Then a modified form of Imhoff tank was considered and discarded in favor of the section as shown above.

The digestion tank in this layout extends above the ground surface, but still presents the required depth and capacity. As may be seen in the section, the sludge storage tank is between the two compartments of the settling tank. Economy is effected in the use of common walls, and the area of the digestion tank exposed to the weather is reduced to a minimum. Higher temperatures may therefore be anticipated due to this condition and to the contact with the walls of the fresh sewage compartments. The roofs of the settling tanks form the floors of the sludge drying beds constructed above them. The sludge beds are provided with Lord & Burnham glass superstructures. The covering is supported on one side by the walls of the digestion tank, thus in a measure making the unsightly appearance of the digestion tank, which extended above the ground surface. The wet well and pump pit are constructed monolithic with the effluent end of the settling tanks, and the controller building is placed upon the foundations thus formed. The finished combination unit is extremely compact.

Each settling tank has four 45° hoppers from which the fresh sludge may be withdrawn and pumped to the digestion tank, from which unit ripe sludge may be drawn by gravity upon the drying beds.

The digestion tank is equipped with sludge circulation piping connected to the sludge pump by a system of valves. In addition, a cast iron decanting pipe is provided for removing the septic liquid.

A feature of the design is a resettling compartment to which the sludge bed filtrate and the septic liquid from the digestion unit are drawn and admixed with the settling tank effluent, in which residual chlorine will be maintained. Sludge settling therein may be returned to the digestion tank.

Removal of Dry Sludge

For removal of dried sludge, a trackway of 10-inch structural steel channels is constructed along the center line of the beds. This runway permits the driving of a small truck into the enclosure, also loading direct from the beds, thus avoiding rehandling. This method has proved so satisfactory at other plants that the work of removing dried sludge has been taken over by those desirous of obtaining this material, thereby relieving the operator of this work.

Grit and Screen Chamber

A grit and screen chamber precedes the settling tank. This unit is constructed in two compartments and is designed to maintain a velocity of one foot per second for the designed flow. The coarse bar screens have a 1½-inch clear opening and are of heavy wrought iron construction. This unit is also provided with a glass superstructure and ventilating sash which removes the raw sewage from the sight of the casual observer.

Application of Effluent to Sand Filters

The effluent from the settling tanks is elevated by pumping and applied upon four sand filters in rotation by Pacific Flush Tank Co. cast iron plural alternating siphons. It was considered expedient to place a 2-inch depth or dose upon a bed at each application. To construct a dosing tank of such volume above the level of the sand beds would involve a bulky and expensive tank with heavy foundations. This was avoided by constructing a

small tank of only such size as to house the four siphons, and by so designing these units that the discharge at the minimum head was less than that of the minimum rate of pumping. In this manner, the seal on the siphons will not be broken until the pump has completed the range of pumpage. This range is determined by float switches and so arranged that the contents of the wet well plus the inflow during pumping will equal the required 2-inch depth upon each bed. As the inflow to the plant increases from year to year, adjustment of the starting and stopping levels in the wet well can be made.

Pumps

Sewage pumps are provided in duplicate, one unit being driven by an electric motor, the other by a combination unit of gasoline engine and electric motor. The engine is provided with clutch and affords an emergency source of power. The combination unit permits a more efficient and flexible use of the pumps, as both units are motor-driven under normal conditions. The American pumps are of the vertical type with the pump located in a dry well below the level of the sewage and with the motors above the upper floor level. Pumps and shafting are supported in a structural steel framework and are absolutely rigid. The station is equipped with an alarm bell which announces the discontinuance of power or pumping.

The gasoline engine is a self-contained unit with electric starter and battery, and is equipped with a tachometer or speed indicator.

The American Well Works sludge pump is of the vertical non-clogging type and constructed similar to the sewage pumps. The electrical equipment is mounted on neat marine finished slate switchboards.

Details

The controller building is a hollow-tile stucco structure with green asbestos roofing, and houses the laboratory. A gas radiator was selected for heating purposes, as it afforded the cleanest and most dependable type. Lavatory and closet are provided for the convenience of the operator.

A W & T solution feed vacuum type machine was selected for prechlorination. This unit is located within the controller building, but application of the chlorine solution is made at the grit chamber. In this plant, chlorine will be used merely for odor control.

The works are designed to treat an average daily flow of 330,000 gallons, or to serve an estimated connected population of 3,300 in 1940. The settling period provided for the designed rate of flow will be four hours, and a capacity of two cubic feet per capita is planned within the sludge storage tank. One-half of a square foot per capita was used as the basis for the sludge drying area. The rate of application upon the sand filters will be 150,000 gallons per acre daily when the plant reaches its capacity.

All berms are neatly sodded and macadam surfacing is placed on the driveways. Glass coverings are painted with aluminum paint; trim and doorways of all superstructures have been painted in green to give the necessary contrast.

The plant was constructed in ninety working days by Joseph L. Sigretto and Sons, Inc., ten days ahead of schedule, at a contract cost of $117,000. The complete sewerage works was designed and supervised by Thomas F. Bowe, consulting engineer, New York City.

Interested Councilmen's Right to Vote

By ARTHUR L. H. STREET

CONTROVERSY has arisen in a community as to the right of a member of the governing body to vote on a proposal to grant a permit for establishment of a new cemetery within the city limits. His right to do so has been questioned, because he will receive a commission, as real estate agent, for negotiating the sale of land to the cemetery company, if the cemetery is established.

Although we do not have before us any court decision in which this specific question has been decided, a reference to what the courts have decided on the subject of disqualification of councilmen to vote upon matters in which they are directly or indirectly interested throws much doubt upon the right of the above-mentioned municipal official to vote on the question of issuing a permit for the cemetery.

In a very recently written summary of court decisions a legal authority says:

"It is a general rule of law that no member of a municipal council shall vote on any question involving his own character or conduct, his right as a member, or his pecuniary interest, if that is immediate, particular, and distinct from the public interest." (43 Corpus Juris, 508, citing decisions from the appellate courts of Arkansas, California, Indiana, Iowa, Kansas, Michigan, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Washington, and Wisconsin, as well as Canadian precedents.)

A payment of money as a direct consideration for voting to grant the cemetery permit would, of course, be bribery, plain and simple. The public interest is not affected in a materially different way if the councilman be influenced to cast his vote for the permit, to secure receipt of the commission for negotiating sale of the land on which the cemetery is to be established. It will not do to say that, as a real-estate broker, he has legitimately earned the commission, for, apparently, he has contented himself to agree that no commission is to be payable until and unless the cemetery company can secure municipal permission to use the ground for burial purposes. The public is entitled to his fair and disinterested judgment as to whether or not the permit should issue, and there can be no tendency to fairness and no disinterestedness, so long as collection of the commission by this official, in his private capacity as real-estate broker, depends upon his vote as an official.

It is true that in many of the cases where votes of council members have been declared to have been illegal because of interest, the interest was more direct than in this case, but it is noteworthy that the courts have usually condemned any transaction along this line that moral or common sense would condemn.

The question of disqualification usually arises concerning a contract with the public corporation of whose governing board the official is a member. In those cases it is well settled that an indirect, as well as direct, interest disqualifies him to vote on the question. The principle has been thus stated:

"The general rule, sometimes enunciated in a constitution, charter, or statute, is that municipal contracts in which officers or employees of the city have a personal pecuniary interest are void. . . . A pecuniary interest direct or indirect is held to come within the prohibition." (44 Corpus Juris, 89, 93.)

An Authoritative Street-Lighting Code

Street-Lighting Committee of Illuminating Engineering Society Formulates Minimum Recommendations for Lighting Various Types of Streets

FROM time to time during past years there have appeared tables, schedules or other forms of statements expressing standards of street-lighting intensities, spacing, mounting height, etc., for different classes of streets, as recommended by various lighting experts. It remained until the convention of the Illuminating Engineering Society last month for there to appear a statement of this kind representing agreement between such a comprehensive variety of interests as to give it the nature of an authoritative, if not official, standard.

The Society's Street-Lighting Committee, made up of 22 members from throughout the United States, representing such varied forms of interest in street lighting as consulting engineering, testing and research, manufacturing, public utilities, technical schools and city electrical departments, has for several years been making a fundamental study of street lighting, and has issued several valuable reports, including its "Principles of Street Lighting" and "Some Illuminating Engineering Aspects of Street Lighting" (reproduced in The Municipal Index for 1928 and 1929, respectively). During the past year it has been developing a "Code of Street Lighting," as a crystallization of certain basic, practical, minimum recommendations, representing much careful thought and discussion on the part of the committee members.

As said by Preston S. Millar, President of the Electrical Testing Laboratories and Chairman of the Committee, in referring to the prospective code in his review of street lighting in THE AMERICAN CITY's anniversary number (September, 1930): "It is believed that the recommendations in this code will be found to be judicious, unbiased and wholly in the public interest. If the code affords the constructive guidance which is expected of it, municipal engineers should find it a useful document."

The code follows:

1. Status of Street Lighting

The tremendous growth of vehicular traffic has occasioned advances in the building of streets, thoroughfares and highways, which in turn have facilitated and encouraged vehicular traffic. With some exceptions, street lighting has not kept pace with traffic requirements. In consequence, many streets are not as safe, effective and convenient by night as they should be. Because of the lack of adequate street lighting motorists have been forced to employ powerful and far-reaching headlights. Such private lighting is by no means a solution of the problem. When the headlights are glaring they are detrimental to safety, comfort and street appearance. Upon adequately lighted streets the use of depressed headlight beams or of side lights only is desirable and should be required. As it is now practical to provide adequate illumination of streets from fixed lamps, a proper self-respect and sense of civic responsibility require that streets should be so lighted that they may carry their traffic with safety and convenience without reliance for illumination upon private portable lights, either for pedestrians or for vehicles. Where this is done, street lighting reduces traffic accidents, provides a crime deterrent, encourages development of business districts, enhances property values and makes more effective use of the large investment in street highway construction.

2. Purposes of Street Lighting

The major purposes of street lighting as formulated by the Committee on Street Lighting, are: (a) To promote safety and convenience in the streets at night through adequate visibility; (b) to enhance the community value of the street; and (c) to increase the attractiveness of the street.

3. Visibility Under Street Lighting Conditions

Vision, as involved in street lighting, is a complicated phenomenon. For sure and comfortable seeing, satisfactory lighting conditions are required, including adequate horizontal and vertical illumination, adequate and well distributed brightness of pavement surface and absence of glare. While there is some difference of opinion as to the relative weighting of these various factors, there is general agreement that all are important.

In view of the complexity of the problem it will be evident that the effectiveness of the street illumination provided in accordance with the following recommendations depends upon the skill with which the flux from the light source is applied. For discussion of this subject see—

(A) Principles of Street Lighting
(B) Some Illuminating Engineering Aspects of Street Lighting

two contributions of the Committee on Street Lighting of the Illuminating Engineering Society (America) to the International Illumination Congress of 1928 which are printed in the Proceedings thereof (pages 96 and 112). The variables which enter into each street-lighting problem are so numerous and important as to indicate the need for thorough, comprehensive consideration of the subject, and, where feasible, of expert guidance.

A brief review of some of the fundamentals follows:

4. Lighting Fundamentals*

The lighting for a street should be designed with due regard to the type of street and its traffic, to the characteristics of the street surface, to the types of buildings along the street and to the presence or absence of trees. It should be made adequate to permit local authorities to require that powerful automobile headlights be depressed or dimmed. For a proper understanding of lighting requirements, the characteristic modes of seeing in streets at night should be considered. Lighting units should be located at optimum heights and transverse positions, and should be spaced properly. Luminaires are more effective when mounted over roadways than when back of the curb lines. Hence upright luminaires back of the curbs usually should be equipped with larger lamps or should be spaced closer together than pendant luminaires located over roadways. Lamps should be equipped with accessories of types best suited to apply the available light to the maximum accomplishment of the purposes stated. Glare should be minimized. The appearance of the street-lighting equipment and of the street as affected by the lighting equip-

* A discussion of some of these fundamentals as contributed by the Committee on Street Lighting to the International Illumination Congress, 1928, is reproduced in the Appendix to this Code, to which reference is here made. (This appendix consists of portions of "A" and "B," above, dovetailed together. As both of these reports appeared in The Municipal Index, the appendix is not included here.—EDITOR.)

ment should meet aesthetic requirements. Finally, economy of installation and operation should be sought.

5. Classification of Streets

For the purposes of the recommendations which follow, thoroughfares, streets and highways may be classified according to their type and traffic function as follows:

Light-traffic thoroughfares	Residence streets
Medium-traffic thoroughfares	Alleys
Heavy-traffic thoroughfares	Park Drives
Business streets	Highways

For purposes of classification traffic should be studied during the lighting hours of a typical week. Vehicle counts for this purpose should be made in that hour of the week carrying maximum traffic during the lighting period. On the basis of such traffic counts, the following are considered usable definitions:

Light-traffic thoroughfares usually carry a maximum of not more than 500 vehicles per hour in both directions.

Medium-traffic thoroughfares usually carry a maximum of approximately 800 to 1,200 vehicles per hour in both directions.

Heavy-traffic thoroughfares usually carry a maximum of more than 1,500 vehicles per hour in both directions.

6. Definitions

A *luminaire* is a complete lighting device consisting of a light source, together with its direct appurtenances, such as globe, reflector, refractor, housing and such support as is integral with the housing . . . the pole, post or bracket is not considered a part of the luminaire.

A *lighting unit* (other term to be used if adopted) consists of the assembly of pole or post with bracket and luminaire.

Spacing is defined as the distance between two successive lighting units measured along the center line of the street. Units approximately opposite each other are to be regarded with respect to spacing as a single unit not as successive units.

Mounting height is the perpendicular distance between grade and the center of the light source in the luminaire.

Candle is the unit of light intensity.

Lumen is the unit of light flux in terms of which the output of light sources is expressed.

Foot-candle is the unit of illumination and is the illumination upon a surface placed at right angles to the direction of the light at a distance of one foot from a source of one candle.

7. Recommended Practice

The following recommendations for street lighting should be understood to be minimum recommendations. It is the opinion of the Committee on Street Lighting that it is clearly desirable to provide more than these minima recommendations wherever feasible. Such better lighting is entirely justified by the increased safety, effectiveness and convenience which are afforded to those using the streets at night. Any permanent street-lighting installation which is based on the following recommendations should be planned so that it will be possible to increase materially the lighting intensity, for it is well known that the standards of street-lighting practice are increasing at a rapid rate. There are many street-lighting installations throughout the country which now exceed the Code recommendations and the Committee on Street Lighting advocates such better lighting installations as being in the public interest.

8. Qualifying Provisions

It is stated repeatedly in the following paragraphs that the recommendations are based on the use of equipment of the most effective type in the most effective manner. With less effective equipment or less effective application of light, larger lamps or closer spacings are required. It should be specially noted that where luminaires are indicated to be placed on brackets extending out beyond the curb, the light is being used in an effective manner; when placed back of the curb, the effectiveness is reduced. The latter placement will usually call for the next larger size of lamp or for closer spacing than mentioned in the specifications. This is not to say that location of post-type lighting units back of the curb is never to be advocated. Such location may be made effective, but usually requires the employment of larger lamps or closer spacings. When upright post-type units are used, a somewhat lower mounting height may be adopted, although a 16-foot mounting height in business streets is justified only where one-story buildings predominate.

With increased height a somewhat greater spacing between units is permissible provided the candlepower of the lamps is increased proportionately.

The obstruction of light by foliage when luminaires are mounted at heights recommended in this Code is sometimes the occasion for adoption of lower mounting heights. While deprecating indiscriminate trimming of trees to facilitate street lighting, the Committee feels that judicious trimming of trees with this object in view is to be advocated where feasible as a preferable alternative to mounting lamps lower than recommended.

The minima recommendations in this Code are intended to apply to usual and representative conditions. As it does not seem practicable to adopt sharp divisions between streets of the several classifications, the following qualifications should be kept in mind when considering these recommendations:

As traffic density increases it is desirable to use somewhat more light.

With a given traffic density on streets of a given classification more light should be provided for unusually wide streets.

Where headlight laws restricting glaring beams are not enforced, somewhat more light should be provided.

Where the number of pedestrians is unusually large for a given street classification, more light should be provided.

Where there are surface car lines more light should be provided, the increase depending upon the frequency of car service.

Where there is only one-way traffic, slightly less light may be supplied.

Where parking of automobiles is not permitted, slightly less light may be supplied.

Where unlighted safety zones are provided, somewhat more light should be supplied. If the safety zones are identified by lights this is not required.

11. Light-Traffic Thoroughfares

(See Sections 7 and 8)

For light-traffic thoroughfares the minimum recommended is a staggered arrangement of lighting units with luminaires located on brackets extending out beyond the curb at a mounting height of not less than 18 feet; with this mounting height the spacing should not be greater than 150 feet; with such mounting height and spacing the lamp rating should not be less than 4,000 lumens (400 candles). On narrow thoroughfares (as 25 feet between curbs) lighting units may be located on one side of the street, although better results will be obtained if the units are staggered. This specification is based upon the use of equipment of the most effective type in the most effective manner. With less effective equipment or less effective application of light, larger lamps or closer spacings are required. The minimum mounting height of 18 feet should be employed only where trees are present or other conditions make a higher mounting height impracticable. Mounting heights between 20 and 25 feet are recommended where practicable.

12. Medium-Traffic Thoroughfares

(See Sections 7 and 8)

For medium-traffic thoroughfares the minimum recommended is a staggered arrangement of lighting units with luminaires located on brackets extending out beyond the curb at a mounting height of not less than 18 feet; with this mounting height the spacing should not be greater than 150 feet; with this mounting height and spacing the lamp rating should not be less than 10,000 lumens (1,000 candles). This specification is based upon the use of equipment of the most effective type in the most effective manner. With less effective equipment or less effective application of light, larger lamps or closer spacings are required. The minimum mounting height of 18 feet should be adopted only where trees are present or other conditions make a higher mounting height impracticable. Mounting heights between 20 and 30 feet are recommended. For lamps of 10,000 lumens or more, higher mounting heights than 18 feet become particularly important and should be adopted where practicable.

13. Heavy-Traffic Thoroughfares

(See Sections 7 and 8)

For heavy-traffic thoroughfares the minimum recommended is an opposite arrangement, or equivalent, of lighting units with luminaires located on brackets extending out beyond the curb at a mounting height of not less than 18 feet, even where

trees are present; with this mounting height the spacing should not be greater than 150 feet on each side of the street; with such mounting height and spacing the lamp rating should not be less than 10,000 lumens (1,000 candles). This specification is based upon the use of equipment of the most effective type in the most effective manner. With less effective equipment or less effective application of light, larger lamps or closer spacings are required. Where trees do not interfere, mounting heights between 20 and 30 feet are recommended. With lamps of 10,000 lumens or more, higher mounting heights than 18 feet are particularly important and should be adopted where practicable.

14. Business Districts

Business streets should be classified as to vehicular traffic in a manner similar to that adopted for thoroughfares and the same minimum standards of illumination should apply for each class, due consideration being given to other local conditions. Retail business streets should never be lighted to a lower standard than that for medium-traffic thoroughfares. Where there is considerable pedestrian traffic these minimum values should be increased.

If the luminaires are not placed over the roadway, lamp sizes should be increased. For a given size of lamp the minimum mounting height should be as follows:

	Not Less Than
For lamps of 25,000 lumens and over.....	24 feet
For lamps of 15,000 lumens.....	20 feet
For lamps of 10,000 lumens and less.....	*16 feet

* This 16-foot minimum mounting height is justified only where one-story buildings predominate.

15. Residence Streets—Non-Thoroughfares

(See Sections 7 and 8)

For residence non-thoroughfare streets the minimum recommended is an 18-foot mounting height for luminaires located on brackets extending beyond the curb, even where trees are present; with this mounting height the spacing should not be greater than 150 feet, although conditions may sometimes necessitate spacings as great as 200 feet; with such mounting height and spacing the lamp rating should not be less than 2,500 lumens (250 candles). This specification is based upon the use of equipment of the most effective type in the most effective manner. With less effective equipment or less effective application of light, larger lamps or closer spacings are required. At closer spacings a lower mounting height, not less than 15 feet, is permissible. Also, 1,000-lumen lamps may be used at the minimum mounting height of 15 feet and closer spacings, preferably not exceeding 125 feet.

Where luminaires are used on center suspension, the mounting height should be not less than 22 feet and preferably not less than 25 feet.

At intersections of residence streets carrying only local traffic, not less than one 4,000-lumen or two 2,500-lumen lamps should be installed.

16. Alleys

Alleys in business and industrial sections and the entrances, exits and intersections of public alleys in residence districts should be lighted.

17. Highways

For the lighting of highways having pavement widths of 22 feet or less, the minimum recommended is an arrangement of luminaires located at mounting heights of 28 feet or more and not more than 10 feet from a point over the middle of the highway; with this mounting height the spacing should not be greater than 325 feet. With such mounting height and spacing, 4,000-lumen lamps should be considered the minimum.

When physical conditions do not permit mounting at such heights, luminaires may be mounted lower (minimum 22 feet) and with closer spacing. For closer spacing 2,500-lumen lamps may serve.

This specification is based upon the use of equipment of the most effective type in the most effective manner. With less effective equipment or less effective application of light, larger lamps or closer spacings are required.

For broad highways carrying heavy traffic, thoroughfare requirements including a staggered arrangement of lighting units, as stated above, should prevail. Luminaires should never be mounted farther from a point over the middle of the highway than the edge of the pavement. In proportion as highways are broad and traffic is heavy, it is important to employ larger lamps, to mount them higher and to space them more closely.

On curved highways luminaires should be mounted over the outside of the curve.

Modern Housing for Negroes Brings Gratifying Results

THE first report on the success of the Michigan Boulevard Garden Apartments Corporation, Chicago, was made at a small supper held in September to celebrate the first anniversary of the building. The Apartments, which cover the entire city block from Forty-sixth to Forty-seventh street and Michigan to Wabash Avenue, represents the realization of an idea conceived by Julius Rosenwald—a demonstration that modern housing facilities for Negroes can be provided on a strictly business basis.

The report at the end of the first six months of 1930 showed an occupancy of approximately 98 per cent. The net income over the six months' period was at an annual rate of about 6 per cent on capital stock. Depreciation and all other items of expense have been charged into the operation and cost of the building. In commenting on this, and on the fact that bad debts over the period were only ⅛ of 1 per cent, Mr. Rosenwald wrote to the assembled guests:

"It is now a little more than a year since the completion of the Apartments, and I should like to record the feeling of satisfaction which is mine, due to the splendid results of our great venture. By results I do not have in mind primarily the financial side, important and desirable as that is, but more particularly the fine type of tenants, with which you and your associates have been instrumental in filling the building. So far as I have learned, there has been little or no friction between the tenants and the management, or among the tenants themselves. This is highly gratifying, and I think great credit is due to the effectiveness of the Community Association and the Board of Advisors, who represent the tenants. In taking the interest they do, and I have no doubt frequently at considerable sacrifice to themselves, the members of this committee are rendering a service not only to the occupants of the building but to the Negroes of the entire country.

"Those living in our Apartments have proved that the Negro is a law-abiding citizen and a desirable tenant. In so doing they have added to the prestige of their race and have tended to encourage the investment of money in kindred projects, since it is known that such property is likely to receive the sort of treatment which might be expected from the best class of people, regardless of race. I have been especially impressed with the quiet that prevailed in the court, which is an indication that those who occupy the building must respect one another's rights."

Among those present at the meeting were Miss Mary McDowell, noted social worker; Alfred K. Stern, Vice-President of the Apartments Corporation; Leonard Rieser, Attorney; N. W. Levin, Treasurer; Dr. Dorothy Van Alstyne and Mrs. Rose Alschuler, Children's Specialists; and the eleven members of the Board of Advisors of the Cooperative Community Association. This Association gives the tenants a voice in the management of the buildings.

The Michigan Boulevard Garden Apartments consists of 421 apartments of three, four and five rooms, representing an investment of $2,700,000. The building occupies less than 40 per cent of the total space, the remainder being laid out in beautiful gardens, courts and a playground for small children. Two nursery schools are run in connection, one for the children of the mothers who work and must be gone all day, and the other for children whose mothers are at home. The building personnel, including the manager, is made up of Negroes.

City Planning Stimulates Public Improvements in Small Texas City

By **H. G. OLMSTED**
Consulting Engineer, El Paso, Texas

A PROGRAM of public improvements actively carried on during the last three years, and continuing with unabated vigor, has resulted in large measure from the leadership of the Brewster County (Texas) Chamber of Commerce, reorganized in 1926 for the improvement of Alpine and the surrounding country.

Two railroads serve Alpine — the Southern Pacific, with a main trunk line from New Orleans to California, and the Kansas City, Mexico & Orient (now owned and operated by the Atchison, Topeka and Santa Fe). The latter now runs from Wichita, Kans., to Alpine, and is being extended to Presidio, where it will connect with the Mexican National Railways, giving direct connection to the west coast of Mexico. Alpine is likewise on three main highways. The city has been for years the center of the live-stock industry of the Southwest and has been known as a typical cow town.

Through the efforts of the Brewster County Chamber of Commerce, following its reorganization, the writer was employed in 1927 to prepare a master plan and a report on what was needed for the city.

New Program to Remedy Unsatisfactory Conditions

In our investigations, we found that only 5 per cent of the city was afforded city water and only 30 per cent was adjacent to a sanitary sewer system. Approximately 2 miles of its 20 miles of city streets were paved and that only with an 18-foot paved strip down the center of the street. No parks, no recreation facilities of any kind, were provided. There were no modern hotel facilities to take care of the increased tourist traffic.

In our report, we prepared a complete plan for comprehensive extensions to both the water and sewer systems to serve the entire city, as well as to provide for future extensions for any subdivision that may be developed. The extensions were completed in 1928 and now take care of 96 per cent of the entire city.

In 1929, a street improvement program was put under way. All old paving, which was of asphalt, was widened from 18 feet to 30 and 45 feet and, in addition, 120 blocks, or approximately 6 miles, of street improvement have been completed.

This work also included drainage structures. Three new bridges were built, the one here shown having been constructed over Alpine Creek, a dry stream 98 per cent of the time. This creek is a very important drainage course, as it has over 50 square miles drainage area of mountainous country.

In 1930, the program calls for the development of the Water-Works Park and the construction of a municipal golf course. The Sul Ross College, a state institution, will also develop a park adjacent to the municipal golf course. A driveway will be provided, as shown by a heavy line on the plan.

As to 1931, the plan provides for a driveway connecting the College athletic field, the College Park, the Antelope Park, the municipal golf course and the Water-Works Park.

Alpine is located with mountains to the east, west and south. In 1935, a complete skyline drive is contemplated over these. This will also connect with the summer resort at Fort Davis in the Davis Mountains.

Former Losses

Prior to the undertaking of this work, the city tax rate was $1.40 on each $100 of assessed value. There were 49 water connections to the water-works system, with a per capita per day consumption of 6 gallons. The cost of pumping water was 28 cents per 1,000 gallons. The fire insurance key rate on the protected district was 71 cents. There was no construction work going on, excepting a few homes surrounding the Sul Ross College campus. There was no tourist trade of any description.

The sanitary sewer system had 140 connections, this being only 16 per cent of the city connected to the sewers.

The monthly rate charged by the city for water was as follows:

First 2,500 gallons	$1.50	minimum
Second 2,500 gallons	.50	per 1,000
Third 2,500 gallons	.30	" "
Over 10,000 gallons	.25	" "

The net loss of operating the water-works system per year was approximately $2,500.

The monthly rate for sewer connections was as follows:

$1.00 per month for each toilet connection
1.50 per month minimum charge for connections
.50 per month for each additional fixture

The net operating loss per year for the sanitary sewer system was $400.

Present Gains

By constructing the program of water-works and sewer extensions, the following changes have taken place:

First, construction of a modern 100-room fireproof hotel, 85 per cent full 11 months in the year.

Second, water connections now number over 350.

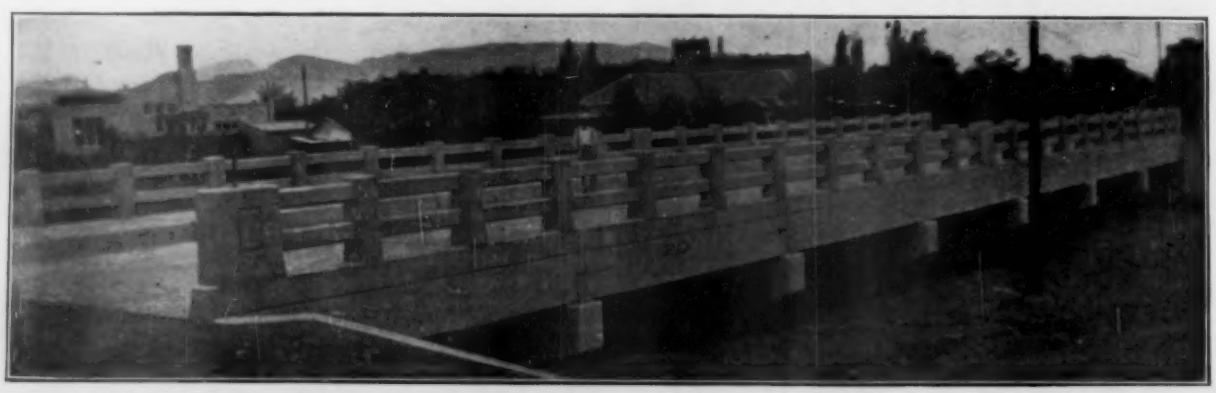
The following new monthly rate was installed:

First 3,000 gallons	$1.50	minimum
Next additional 2,000 gallons	.30	per 1,000
Next additional 2,000 gallons	.25	" "
Next additional 2,000 gallons	.20	" "
All in excess of above	.12½	" "

The cost of pumping water has been reduced from 28 cents to 3¾ cents per 1,000 gallons.

The fire insurance key rate has been reduced to 60 cents and covers the entire city, instead of 71 cents for 10 per cent of the city.

Instead of an operating loss of $2,400 per year, there is now a profit of approximately $2,500 per year, with all ex-



FIFTH STREET BRIDGE, ALPINE, TEXAS
This structure is 140 feet in length. Its roadway is 24 feet wide, with a 5-foot sidewalk

penses taken care of, including sinking-fund and interest on the investment.

Third, the sanitary sewer system has an equally good record.

Cost of the Improvements

The cost of both of these improvements was $125,000, for which 30-year 5¼ bonds were issued. Approximately $700,000 worth of new buildings have been constructed, including a new modern high school.

In this expenditure, the tax rate of $1.40 on each $100 assessed valuation was not raised for 1928.

Under the paving program, it was necessary to raise the rate to $1.45, as the city bore 50 per cent of the cost of the street improvements and the entire cost of all drainage structures. The property owner's portion of the cost was assessed on the front-foot plan.

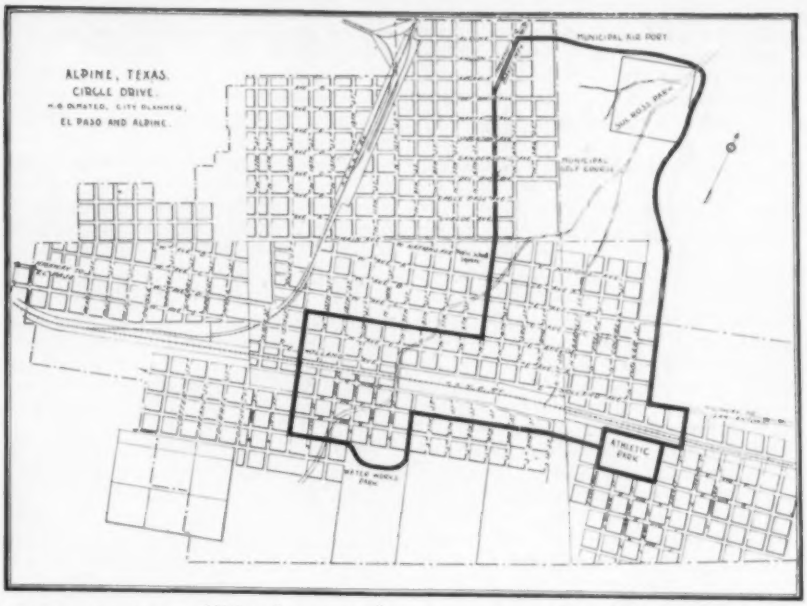
All work constructed was carried out according to a general plan of development covering a period of 25 years.

The cost of the work completed, as of December 31, 1929, was as follows:

Water and sewer system improvements.	$130,000
Bridges and other structures.....	20,000
Street improvement program.....	160,000
Total	$310,000

The net results of the city planning movement, at an additional cost to the taxpayer of five cents on each $100 of tax valuation, may be represented by the following summary:

1. 95 per cent of the city is now equipped with water-works and sanitary sewer systems
2. 16 miles of street improvements completed
3. 3 concrete bridges constructed
4. 100-room modern fireproof hotel completed
5. Over $700,000 new buildings constructed, including a new modern high school



That Bigness Complex

Excerpts from an Address to the Flint City Commission and Chamber of Commerce

By **J. FRED WOODRUFF**

Former Chairman of Charter Commission, and First President, Village of Huntington Woods, Mich.

ISN'T it about time that sensible men relegated both the ungrateful knocker and the obnoxious booster to the dust-bin to take their places with the other quaint absurdities of the gay 90's? How futile, how pointless, this idle cheering for "the greatest little spot on God's green footstool!" As if any single spot in the universe could corral all the attractions of the world or all the desirable qualities of the living or all the opportunities of the country! What a tragedy it would be if that were true!

Progress, all will agree, is not to be measured quantitatively or dimensionally, but rather qualitatively. Real progress is not to be interpreted in terms of how many or how big, but what kind. Real progress is not to be stated in terms of population statistics, extent of municipal boundary lines or material wealth. Even if size were the true measure of civic progress, according to some of our leading authorities on population tendencies, every one of our fast-growing, ambitious cities is in for an era of disappointment and disillusionment. . . .

What *Is* Civic Progress?

Real civic progress is advancement in the science and art of living. Real progress comprehends only those movements designed to develop men physically, mentally, morally and spiritually. The activities which constitute progressiveness at one time may be exactly the opposite at another, but the principle is the same at all times. The true gage of progressiveness is the ultimate effect produced upon human beings. . . .

After all, a community is what? Not a collection of buildings. Not a series of paved and lighted streets. Not an aggregation of factories. These are only the accessories, the tools. A community consists of people. A community is a collection of individuals, and society is only great when its people, taken collectively, are great. If size and number make for greatness, then Rome was greatest when, mistress of the world, its boundaries were limited only by the borders of known civilization, and yet, rotten to the core, its people were interested only in gory spectacles and free distribution of food, and the City Eternal was already tottering, merely awaiting the flood of virile barbarians from the north to complete its destruction.

In whatever else we disagree, I hope we can all meet in this common ground —that true progressiveness is to be interpreted in terms of human advancement alone—that this is our ideal from which no allurements of material magnitude can divert us.

There are four steps which any community pursuing a program of civic advancement must follow: It must develop an active, intelligent civic consciousness. It must have the facilities for finding out the facts about the community and it must have the courage to face them when they have been determined. It must clearly decide what it most desires the city to be as compared with what it is. It must enlist the united and enthusiastic efforts of the entire citizenship to achieve the common end. . . .

We Can't Get Away from Each Other

If the city were a boat and if this boat with its crew and pasengers were out in the middle of the ocean, it wouldn't take the citizens long to discover that "they were all in the same boat." Just about one good squall would teach them that fact. They would understand clearly that they stood still, went forward or sank, together. That, I believe, is the first requisite to the development of public interest in the welfare of a city. Figura-

tively speaking, all of us are in the same boat. Our welfare is enhanced or impaired in exact proportions as the welfare of the city is enhanced or impaired. If municipal inefficiency results in an unduly high tax rate, each in his proportion pays the tax. If the schools are poor and inadequate, our children suffer and the next generation pays the price. If slums are allowed to fester, undisturbed, the epidemics they generate will know no boundary lines and make no distinctions as to wealth or station in life. The adolescent boy turned criminal because we leave it up to the gangster and gambler to satisfy his adventurous cravings, will eventually be found, pistol in hand, plundering the homes of our most honored citizens, ready to shoot his way out if discovered.

We can't get away from it: We're all in the same boat, for better if we so will it or for worse if we permit it. Our first point of attack is on the basis of self-interest—an intelligent self-interest simply because we can no more get away from each other than we can get away from ourselves. We are all inseparable units of a common social organization.

In the next place, people are imitative. In my day at college, you just had to have rubber boots and corduroy pants or something terrible would happen. A few years ago, it seemed that the only reason manufacturers put buckles on overshoes was so that they could rattle when the girls walked around with the flaps left open. People are more susceptible to example than direct education and instruction. Unfortunately, they are just as susceptible to a bad example as they are to a good one—perhaps more so. If the city is indifferent to the dirty and littered streets and uses no influence to eliminate structural atrocities, garish shacks and tumbledown relics of a passing day, you can hardly expect the average citizen to keep his dwelling place tidy and a delight to the eye. . .

You Have Just the Sort of City You Really Want

Isn't it possible—first, by example and then, by precept—to awaken a civic pride in the tens of thousands of people who make up a community, so that they will appreciate, cherish and aid in securing all those things which make a city a happier, cleaner, more beautiful, more healthful place in which to live, work and play?

Here, indeed, is a field in which your Chamber of Commerce, hand in hand with your civic organizations, can do a job which, because of the intense pressure of their other duties, because of the very legislative and administrative nature of their work, because of their official limitations, municipal governments—whatever their forms, must leave to others as supplementary activities.

Don't think for one moment that merely by changing from one system of government to another you can cure every municipal ill and possess yourself of every municipal blessing. Your city and your government can rise no higher than the sources from which it springs.

If you can once impress the electorate with the absolute fact that the people always get just the quality of government they merit according to the interest they manifest, the civic intelligence they possess and the cooperation they extend; that they have just the sort of a city that they really want; then you achieve results by virtue of an aggressive, active civic consciousness. Then you will develop the leadership that is capable of carrying your city to heights of greatness of which you only dream, now. . .

We Need to Know the Facts

Governmental research, an idea that was non-existent just a few years ago, is going to play an increasing part in the future in the conduct not only of national and state but also of municipal affairs.

Whether we like the Hoover idea of fact-finding commissions or not, we must realize more and more that municipal activities are becoming more complex, more technical, more highly specialized and more vital to every phase of the well-being of the community. Therefore, our actions cannot be predicated on the desires of special interests that enlist in their behalf the services of skilled propagandists and publicists. We cannot be swayed by the prejudices of a bigoted minority or the half-baked ideas of an uninformed electorate. We cannot harken to specious arguments or be misled by political strategy. But we do need, and must have, a scientific and comprehensive determination of all the facts which, when ascertained, will unerringly point out the decision to be made and the plan of action to be adopted.

The questions which confront every municipality are these: "How far are you willing to go, and how much are you willing to spend in civic research, in unbiased fact-finding, and how far are you willing to make this the basis of all your activities?" . . .

Your program depends upon two things—knowledge of your conditions and vision of the city as you would like to see it. . .

The Chamber of Commerce program which I should like to see is a unified, coherent program with just the right balance between the directly commercial objectives and the directly civic and human objectives, each occupying a position in the whole scheme of things in proportion to its importance, and all carefully designed to make your city the finest city possible for human beings to work in and live in and in which to cultivate their hearts and minds and souls.

Paths of Action

Would you like to see yours the most famous city in America, in the next twenty-five years, or less, without adding one person to the number which will be reported in the 1930 census, without extending the boundaries of your city one inch, and without adding one dollar to the total volume of its wealth? That is quite within the realm of possibility.

How? First eliminate the "bigness" complex from your minds. Substitute the ideal of "betterness." Don't worry about your growth. Let it come naturally with time and orderly development.

In the second place, concentrate your attention on a sound solution of those fundamental municipal problems which seem so impossible of settlement to practically every large industrial city in America because it has been so occupied in keeping pace with abnormal growth and so ambitious for still greater growth that it has been distracted from the really worth-while objectives of community existence.

Let your city stand as the guide-post for others, pointing out the way to put the business of law-making and law administration on a scientific basis, firm in the knowledge that laws are to be discovered from a knowledge of human behavior and psychology and not to be manufactured to meet the prejudices of some or the special interests of others.

Set yourselves up as an example in skillful handling of municipal finance problems, formulation of budgets, elimination of waste and efficient spending of taxpayers' money.

Tackle the crime problem from a new angle. Realize that crime prevention begins with shutting off the source of supply of criminals and not by catching them when it is too late. The first American city which realizes that this modern age does not offer any obvious outlet for the adventurous energies of the adolescent boy and therefore competes adequately with the poolroom and the speakeasy by offering equally interesting and equally thrilling outlets for youthful energy, will find an honored place in America's hall of municipal fame.

This city will also realize that cleanliness is as godlike a virtue when applied to a municipality as when applied personally. Débris will not be allowed to accumulate; factories will consume their own smoke; dirt will not be tolerated.

With this cleanliness, it will acquire a new sense of civic beauty, a full appreciation of the importance that esthetics play in a wholesome municipal life. Its own activities and beautification will be the inspiration of its citizens in their private homes and personal property. Esthetic nuisances will not be permitted to botch the landscapes with their ugly unsightliness, nor will the city wait for some philanthropic fire to remove moldy, tuberculous slums.

Finally, it will teach all America a new conception of municipal government. As the people become more intelligent civically, and more conscious of their responsibilities individually to society as a whole, government will become less and less a function of policing and more and more one of rendering service. . .

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FORWARD STEPS

Reported by
Municipal Officials, Chamber of Commerce Executives, and Others

Forestry Department Stimulates Interest in Planting and Care of Trees

FORT WORTH, TEXAS.—The Division of Forestry of the Park Department of this city was created in 1926 and has charge of all trees on the streets and in the parks. During the past year alone, between five and six thousand trees were pruned and thousands of low limbs were removed. In addition, 15,000 to 20,000 trees were sprayed. Practically all trees in every park were pruned and many were cabled to prevent damage from winds. It is the policy of the Department to stimulate interest in better planting and the proper care of yards. Here, in Texas, we have the Homestead Law, under which it is impossible for us to assess the cost of street planting against the adjacent property owners, hence we cannot carry into effect a comprehensive street-tree planting program such as is possible in some states, as described recently in THE AMERICAN CITY.

In the South there are more plant diseases and more insects than in almost any other section of the country, therefore the problem of diagnosing plant diseases requires much experience and study. Experience has taught that here many thousands of dollars are wasted annually by private property owners without expert forestry service. That is why our City Forestry Division maintains a free inspection service. Any one may make use of this service. That a great many people do is evidenced by the fact that we make from 1,000 to 1,500 inspection calls annually. Our efforts towards new planting are largely educational, though we plant trees in the parkway for property owners at a cost of $5 per tree, guaranteeing planting for two years.

RAYMOND C. MORRISON,
City Forester.

THREE TYPES OF PLANTING

Done under administration of the Fort Worth Division of Forestry. The top illustration shows a park drive; the one in the middle shows a street with a planting strip at each curb and a park strip down the middle; below is a boulevard with a double row of trees

Chamber of Commerce Provides Free Parking Place

WATERTOWN, N. Y.—This city has a population of only some 30,000, yet because it is the shopping center for nearly 200,000 and because it is also the converging point of the tourist trails from the south and west into the Thousand Islands, Adirondacks and eastern Canadian resorts, it has a very perplexing traffic and parking problem. Its public streets in the business section can accommodate only a fraction of those who wish to park their cars for business reasons. When requested to provide public parking grounds, the city administration questioned whether the public would use off-the-street locations if provided within reasonable access.

The Chamber of Commerce agreed to find out, and proceeded to rent the piece of land nearest available to the business center. Large sign-boards were erected on the seven main highways into the city, calling attention to the location of the parking ground. Parking on these premises is absolutely free and without restrictions of any sort.

Although the experiment and the resulting studies are not yet completed, the results of the first six weeks of operation present some very interesting facts. During this period over 2,400 cars were parked, of which 27 per cent were city-owned, 65 per cent were rural, and the remainder were tourists' and traveling men's cars.

The greatest use was made of the grounds for afternoon parking, and the peak demand for Saturdays. Forty-five per cent parked afternoons only, 19 per cent forenoons only, and 36 per cent stayed all day. Of the all-day parkers, 39.5 per cent were city cars. Eleven per cent of the afternoon parkers were city cars, as were 42 per cent of the forenoon users.

The parking place is at the northwest end of the business section and is on the direct route of three city approaches which carry approximately 47 per cent of the incoming traffic. These routes brought in 65 per cent of the out-of-town patrons. Rural drivers hesitate to go through the congested downtown streets,

THE BENTON HARBOR MARKET

and without doubt a similar parking ground at the east end would be used even more extensively.

During the summer months the Chamber conducted a very extensive parking survey, and its Traffic Committee is preparing a comprehensive report of parking needs, with definite recommendations to meet them. Off-the-street parking places will undoubtedly be recommended instead of street widening and elimination of green lawns and decorative monuments.

ERNEST C. GOULD,
Secretary, Watertown Chamber of Commerce.

Swamp Transformed into Site for Public Fruit Market

BENTON HARBOR, MICH.—The greatest market of its kind in the country, the Public Fruit Market of Benton Harbor, "The Heart of the Fruit Belt," occupies 4¾ acres, which, until its development recently, was a swamp lying just above the mean level of the Saint Joseph River. It was frequently flooded to a depth of two to three feet and overgrown with cattails and other swamp vegetation. Filling in the tract (260 feet wide by 666 feet long) with earth to an average depth of 6 feet and spreading on an 8-inch layer of clay-bearing gravel, with rolling and leveling, cost $65,000.

Previous markets have been developed here only to reach their limit of usefulness, and from time to time larger tracts of land have been improved for market sites. The new market represents the climax of all previous efforts. Improved highways, motor-trucks and standard packs have played an important part in the expansion of the market, which has obsorbed twenty or more fruit markets formerly located in various small towns in the county. Berrien County, the southwestern county of the state, produces more small fruit than any other county in the United States and is the second largest fruit-producing county in the country.

The volume of business transacted on the Benton Harbor Public Fruit Market has ranged from $2,500,000 to $3,000,000 for the past three years. This year's figures are expected to exceed these amounts by a considerable margin. Last year's strawberry crop sales amounted to $217,008; this year's figures were $503,471. Up to September 26 there were 75,000 farmers' loads, or a total of 3,375,000 packages; the receipts from all sources approximated $18,550. Trucks transport the fruit into seven states, and an average of one thousand growers' loads of fruit are expected to be sold each operating day in the 1930 season (June 1 to November 15).

The present market has profited by past experience. Two loading platforms have been erected, each 14 feet wide by 630 feet long, and are roofed, sided partway down, and floored to provide accommodations for the large number of buyers who gather daily during the fruit season. These loading platforms are divided into stalls 10 by 14 feet and are rented to buyers for $50 per stall per season. Small office booths have been built on the platforms. The producer enters the market through two gates, where the market fee of ten cents per load, regardless of size, is collected. He is directed into a traffic lane where his load receives the attention of the buyers. After selling the load, he drives to the end of the lane and then directly to the stall of the purchaser, where his fruit is unloaded and loaded onto the buyers' trucks for transporting to its destination.

H. L. LYNCH,
City Manager.

A Pedestrian Subway to an Island Playground—for Monkeys

CINCINNATI, OHIO.—Opening day at Monkey Island will be long remembered among the simian population of the Cincinnati Zoo for its gaiety and freedom, which was marred only by the unsuccessful attempts of the first arrivals to maintain possession of their newly found paradise for their own use.

Other cities may have zoos with monkey islands, but this new development is unique in that it is connected with the monkey house by a 4-foot under-water tunnel, making it available for use whenever there are a few hours of bright sunshine at any time of the year.

AN ANTIDOTE FOR HOUSING EVILS

For some time there has been overcrowding in the monkey settlement at the zoo. To relieve this congestion and at the same time add to the attractions of the zoo, Monkey Island was constructed in the rear of the old monkey house. This island is situated in the center of a concrete basin built like a swimming pool with a depth varying from a few inches around the edge of the island to 3½ feet at the foot of the outer enclosing wall. No cage bars separate the monkeys from the visitors of the zoo, 25 feet of water being the only restraining influence, with the exception of a slippery overhanging outer wall topped by a low rail, that keeps the monkeys and their human cousins separated. The island itself is built of cement blocks overlaid with a cement representation of jagged hills, the cement being applied to metal lath supported by wooden framework. Two chambers built inside the

THE SUBWAY STATION AT "SIMIAN ISLAND"

THE SUBWAY CONSTRUCTION

island provide shelter for its inhabitants and also facilities for isolating individual monkeys should the occasion require.

In designing and planning the island, ready means of communication for both the monkeys and their keeper was provided by a 48-inch Armco corrugated iron pipe, 30 feet in length, laid under the floor of the pool.

RECREATION DE LUXE

A miniature log cabin is built over the island entrance of the tunnel. Its doors, windows and even its chimney provide a ready means of egress and entrance. Inside there are benches on which the tiny residents may sit and enjoy a few minutes of rest if they should so desire.

The entertainment of the occupants of this simian utopia is well provided for. Two cedar trees situated at each end of the island and connected by a swinging bridge offer an outlet for the climbing proclivities of the little inhabitants. Most of them are natives of India and have had previous experience with water. A boat and spring boards add to the enjoyment of those who have a liking for water sports.

HOW IT HAPPENED

This popular feature of the Cincinnati Zoo is the realization of the dreams of Sol. A. Stephan, manager of the zoo, and the brainchild of his son, Joseph. Construction was started on May 3 and completed ready for use by the 15th of June. The design and construction of the entire project was under the direction of the writer. The formwork was supervised by Charles Dollenmayer, carpenter superintendent of the Mariemont Company, Mariemont, Ohio.

WARREN W. PARKS,
Resident Engineer, The Mariemont Company.

City Aids Ancient Amusement of Cheese Bowling

SAN FRANCISCO, CALIF.—Another innovation of the Recreation Commission of San Francisco in the way of public amusement places has been the installation of a cheese-rolling bowling-alley for use of Italian citizens. The game is an old one with the Italians, and the alleys are of course located in the Italian quarter, near the Marina. Those participating in the game for years rolled their cheeses out in the open on the hard, bare ground. But recently the city installed well-made alleys, greatly resembling bowling-alleys, for the use of the players. The game, briefly explained, consists of rolling Italian cheeses, of from eight to ten inches in thickness and having a diameter of about sixteen or eighteen inches, down the alleys against an array of pins. The winners take the cheeses from the losers. The alleys have no covering, so that the players have the benefit of sun-baths while playing in the open air. Great crowds assemble about the alleys during the evenings and on Sundays and holidays to watch the games.

MONROE WOOLEY.

THE WINNER HERE TAKES HOME THE CHEESE

How a Town Off the Main Highway Is Getting Tourist Trade

ROYAL OAK, MICH.—Royal Oak lies midway between Detroit and Pontiac, but its business center is about one-half mile east of Woodward Avenue, the heavily traveled connecting highway. This location is advantageous in relieving the center of the city (which has grown from 6,007 in 1920 to 22,805 in 1930) from the traffic congestion which would result if Woodward Avenue passed through it. But until last summer Royal Oak merchants and citizens interested in housing tourists have been deprived of the benefits of the tourist trade.

A few months ago the Kiwanis Club conceived the idea of erecting an information booth in the parkway of Woodward Avenue to help tourists and to tell them of the services which they could obtain in Royal Oak. A building, once used as a real estate office, was presented to the Club and moved to the chosen site after permission for its erection had been obtained from the Michigan State Highway Department. Local merchants completely furnished the tiny building, and the Michigan Bell Telephone Co. installed a telephone pay station, without charge. A florist added the final touch by filling the window-boxes with flowers. The city of Royal Oak erected signs north and south of the booth to inform tourists of its location, and to advise them that accommodations could be obtained in Royal Oak.

At the booth, in addition to road maps of the various states and information concerning routes to any point in the United States or Canada, is a room-register listing available accommodations in the city. Any citizen in the town who desires to rent rooms to tourists may register at the booth by filing an application accompanied by a fee of $2. The home of each applicant is investigated by members of the Royal Oak Woman's Club. If the investigators find that the home fulfills requirements, the registration card is placed on file; otherwise the

PEOPLE FROM EVERYWHERE STOP HERE

money is refunded. Any attempt on the part of the home-owner to profiteer is forestalled when he files his application, as he writes on it the prices at which rooms and meals may be obtained at his home.

The booth has been a decided success, and plans are being made for its continuance next season. Through its kind and courteous service it has made a splendid impression upon tourists, and has won many friends for Royal Oak. About 65 tourists a day have been supplied with information and printed literature about the city. The services of the booth have also been extended to city residents, who have been assisted in mapping vacation and business tours.

JAMES G. MATTHEWS.

More Safety for Children at Radburn

RADBURN, N. J.—An extension of the safety street system at this "Town for the Motor Age" has been completed with the opening to the public of the pedestrian bridge or overpass crossing Fair Lawn Avenue. This bridge connects the park walks of the older part of Radburn with the section south of Fair Lawn Avenue, opened this fall.

The bridge is a wooden truss structure of fir in natural wood finish with ramps and shallow steps at each end. It was necessary to depress Fair Lawn Avenue about 2½ feet to secure the necessary headway without making the ramps and steps too high for the comfort of pedestrians. Seven-foot concrete walks lead to each end of the bridge through a strip of landscaped park.

This is the second time provision has been made to insure the safe crossing of a traffic artery at Radburn. The first structure was an underpass, under Howard Avenue, joining the park systems of two superblocks in the first residential section. The overpass connects these blocks with the new parks south of Fair Lawn Avenue.

Both the underpass and the overpass are integral parts of the unique Radburn plan which, by a system of closed-end streets, garden walks and parks in block interiors, separates pedestrian from motor traffic. With a growing recognition of the increasing dangers from motor cars to children and adults on our streets today, the Radburn plan, which attempts to get to bedrock in attacking the problem of traffic safety, has attracted nation-wide attention. The fact that children may go to school, playgrounds, swimming pools or parks without crossing a single traffic street has proved especially interesting not only to individual parents but to city planners, safety councils and child welfare associations. At Radburn the pedestrian, grown-up or child, need not cross a street—he can go over or under.

HERBERT EMMERICH.

RADBURN, N. J.

This airplane view showing existing conditions is in interesting contrast with one taken in September, 1929, and reproduced in THE AMERICAN CITY, November, 1929, page 142

PEDESTRIAN BRIDGE OVER FAIR LAWN AVEUNE, RADBURN

A Police School Developed from Local Material

PORTSMOUTH, OHIO.—It is difficult for a town of 50,000 people to establish a police school that is in any way nearly on a par with those of the larger cities, but by drawing upon available local material we have been enabled to start a course of lectures that is proving most worth-while and advantageous and is meeting with universal approval.

Thirty lectures have been scheduled, covering the period from September 29 to November 7. The topics include the duties of the police in general and particular; traffic matters; social problems, including juvenile delinquency and prostitution; Federal law enforcement, including prohibition; legal points, including criminal procedure; fingerprints; psychiatry; relations with the Fire Department and the general public; municipal government; and discussions of various classes of crimes and criminals. The instructors, who have volunteered their services without pay, include officers of the Department, judges, lawyers, physicians, ministers, and various officials such as the Fire Chief, the Coroner, the United States Commissioner, the County Prosecutor and the City Manager.

Classes meet at 10 A.M. for day men and at 8 P. M. for night men. The period is divided into two parts, the first for the lecture and the second for discussion. The men are required to take notes, and, in addition, Mr. Posegate of the School of Citizenship and Public Affairs, of Syracuse University, who is spending his apprenticeship period here, makes an outline of each lecture and discussion, which is mimeographed and distributed to the men for permanent record.

We realize that there are several angles of police work that are not covered, and we are planning to gradually expand the curiculum from year to year until it is a well-rounded whole.

C. A. HARRELL,
City Manager.

Drill School and Tower Increase Efficiency of Fire Department

KANSAS CITY, MO.—Since the establishment of a drill tower and school for the Fire Department, in October, 1928, there has been an appreciable reduction in the per-capita fire loss in this city.

Each of the 39 companies in the Department has spent an average of two days each month in intensive work and study under the direction of District Chief Thomas Hardwick, drillmaster.

It now takes the firemen seconds to accomplish what formerly in many instances required minutes. That is the answer received from heads of the Fire Department when asked whether the drill school and tower have proved of value. There is no fumbling around with ladders, hose or other equipment now when the fire crews get into action.

The fact that Kansas City in 1929 reported the lowest per-capita fire loss since 1919 is attributable to a great extent to the intensive courses of instruction the men are required to take, according to Department heads and Colonel Charles Edwards, Chairman of the Police and Fire Committee of the Chamber of Commerce, which fought for years to have the school established and the tower erected. The loss per capita in 1929 amounted to $3.83, making a total of $1,531,876, a figure $300,000 under that of 1928. The figures are compiled from Fire Department reports just made public and from the United States census.

In addition to the Chamber of Commerce activities, other civic organizations joined with the National Board of Fire Underwriters in recommending the present Kansas City system of training.

The entire outlay for equipping the Kansas City school and building the tower, which includes the cost of land and paving with concrete, was only $21,517.68. The tower itself cost slightly over $2,600.

The school and tower are on a small tract of land adjoining one of the central city station houses. As soon as the land was acquired, it was covered with concrete and a fence was erected to provide protection for spectators while drills and demonstrations were going on. The tower is 65 feet in height and, as can be seen from the illustration, is of skeleton steel construction and provides five full floors for drill evolutions. It is provided with inside stairways, outside stair-type fire-escapes and ladder-type escapes. Standpipe risers are located on each floor, as are dummy window frames which provide facilities for pompier ladder practice. In addition to the tower, the only construction work involved was the paving and the construction of a cistern and a smoke and gas room, or chamber. In this room the men are taught how to use gas masks and how to protect themselves from such dangers when artificial respirators are not at hand. Appliances and tools on all pieces of apparatus have been modernized and standardized to conform to the evolutions taught in the drill school.

In all the drills and exhibitions the men of the Department have gone through since the tower was built, there has never been an accident of any consequence, although at many times the men have worked at dangerous speed. When the school and tower were opened they were inspected by officials of the Western Actuarial Bureau of Chicago and pronounced the most modern in the country. Schools in other cities had been inspected before a definite program of instruction or building was adopted. The National Board of Fire Underwriters cooperated in this and also agreed to furnish lecturers for the school when it was established.

Kansas City was badly in need of such an organization long before it was established. Fire losses grew so heavy, and the Underwriters so insistent that something had to be done about it, that in 1925 the city voted $1,200,000 in fire bonds. The per-capita fire loss had been as high as $9.19, which figure was reached in 1922. The year the bonds were voted, the per-capita loss was $8.95. The Underwriters insisted that new equipment and a drill school were needed, that the Department was under-manned, and that the old equipment needed modernizing.

The school now runs smoothly and every objector to establishing it has been won over. The Fire Department was increased from 396 men to 440 in 1929, and a two-platoon system was adopted in place of the old 8-hour shift plan. The men now serve 24 hours at a stretch, with the same period of time off at the end of a tour of duty.

GILBERT SMITH.

TOWER OF THE KANSAS CITY DRILL SCHOOL

FARMERSVILLE'S NEW PUBLIC SERVICE CENTER

Municipal Building Houses Power-Plant and Other Activities

FARMERSVILLE, TEXAS.—The new municipal building of this city houses the City Hall, including the Mayor's and Collector's offices, the municipal light and power plant, the fire station and the municipal band hall. The power-plant portion includes three Fairbanks-Morse diesel engines of 240, 180 and 120 horsepower, respectively, making a total of 540 horsepower. The plant was constructed without a bond issue, and is being paid for out of the net proceeds of the city's light and power business; all notes are being met before they are due. The plant enjoys 90 per cent of the electric business of the town in spite of a cut rate by the utility company of 5 cents per kilowatt-hour for the first 20 kwh. and 3 cents thereafter. The municipal plant was installed by the City Council at the insistence of the citizenship because of unreasonable rates charged for lighting and power by the company serving this city. Farmersville also owns its own water and sewer systems, both on a paying basis.

SID HILDRETH, Mayor

The $3,000 Prize-Winning Design for Shanghai's Civic Center

Where Ancient Chinese Architectural Tradition Is Wedded with Modern Civic Design

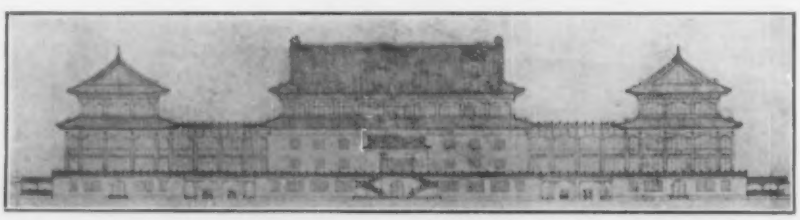
IN an effort to assist the municipal authorities in their immediate task of developing a practical and beautiful civic center for Greater Shanghai, and also to encourage the architects of China to prepare themselves for future work in adapting Chinese building design to modern governmental requirements, the official City Plan Commission of Greater Shanghai recently conducted a very successful prize competition. Cash awards of $3,000, $1,500, and $750 were made by the Jury, based upon a preliminary vote, a discussion of the choices by the Jury, and a final polling on the basis of points scored. In ranking the designs, the general plan counted 50 per cent, the Chinese architecture of the building elevations, 30 per cent; and the remaining 20 per cent was divided evenly between the plans of individual buildings and the meeting of space requirements imposed by the conditions.

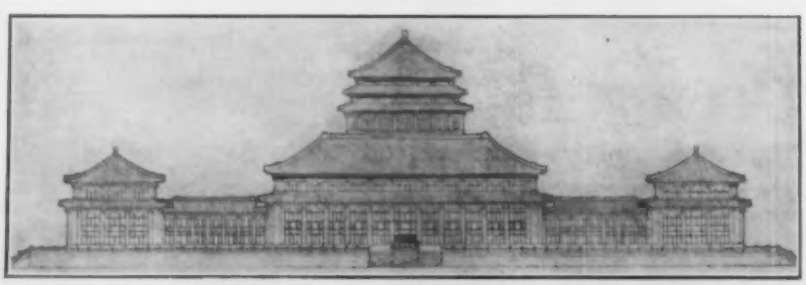
Design Number 6, with a total of 19 out of a possible 20 points, was awarded first prize. Emphasis was placed by several of the judges upon the satisfactorily Chinese character of the exterior architectural treatment. In fact, in summarizing the factors upon which the awards were made, Henry Killan Murphy, Chairman of the Jury, said: "This design is an excellent proof that it is entirely possible to secure, in Chinese architecture, the full economy and efficiency of modern building design without compromising in architectural purity by attempting to combine with it elements of essential foreign architecture." The general plan of this design was found to suffer somewhat from the defect common to most of the entries, in being spread over too large an area; but the compactness of the central building group together with the fact that most of the space requirements of the program would be fairly well met without including the southernmost buildings, gave this design preference over more compactly arranged general plans.

"The plan provides splendidly for gradual construction in many successive stages . . . with symmetry and effect of completeness at every stage. It meets . . . the need of the situation for a grouping which will be architecturally effective from all directions, avoiding the feeling of 'front' and 'back' which detracts from most of the other designs. The units are skillfully built into small courts; the whole giving a grouping very satisfactorily Chinese in its architectural character. . . .

"The traffic arrangements are excellent, both for circulation within the group and for passing through it, the cleverly planned tunnels carrying the two east-and-west tranverse avenues underneath the main avenues being an especially interesting contribution. . . .

"The plans of individual buildings show a good understanding of the requirements of a modern municipal group and are efficient and economically arranged, architecturally and structurally."





BUILDING FACADES OF THE PRIZE DESIGN

The character of the exterior and interior planning for the public buildings to be placed in the civic center figured prominently with the judges in giving the award to Design 6, illustrated at the top of this page

Much About

CIVIC CENTERS

In General

appears in the 1930 *Municipal Index. Commencing on page* 159 *of that volume is a* 16*-page article in which the civic centers of* 54 *centers are illustrated, and described. Costs, details of land and building planning, and progress to date are shown, and the material presented constitutes a study such as is nowhere else available.*

New York State Plumbing Regulations for Property Served with Water Outside Municipal Limits

From a Report of the New York State Bureau of Municipal Information, Albany, N. Y.

REPORT No. 1147 of the New York State Bureau of Municipal Information, Albany, N. Y., contains interesting data on the regulation of plumbing for water services outside corporation limits of the various cities and villages. These are reported alphabetically.

Amsterdam furnishes water to property owners outside of its municipal limits, but requires that they comply with the plumbing code of the city before permission is granted to tap the water main.

All water connections outside of the city limits of Batavia are required to be metered.

Property owners outside of the municipal limits of Beacon are required to comply with the plumbing code before permission is granted to tap the main.

Binghamton permits connections to its water system by property owners outside of the municipal limits, but requires compliance with the city's plumbing code. All connections in Port Dickinson are made by a licensed plumber who lives in the city.

Compliance with the Buffalo plumbing code is not necessary on connections outside the city limits, although all services are required to be metered.

Cohoes and Corning do not supply property outside their municipal limits with water.

Cortland permits outside connections if the plumbing code is adhered to, while Dunkirk permits connections without restrictions as to the plumbing.

Elmira lays all water services to the cellar and sets the meter.

Fulton permits connections without compliance with the plumbing code and Geneva requires that plumbing regulations be followed on all services as far as the meter.

Gloversville does not make connections outside its municipal limits.

Hudson and Ithaca both grant permission to outside property owners for connections with the city mains if the plumbing conforms to the municipal code.

In Jamestown, the plumbing regulations, so far as the water department is concerned, are the same in all territories served. The department is not interested in the type of plumbing used inside the building beyond the meter. All connections to the city's mains are made by the Department, which carries the service to the curb at its own expense. From the curb into the building the service is installed at the property owner's expense, the work being done preferably by employees of the Water Department or by licensed plumbers. All work must be inspected and tested prior to filling of the ditch.

Kingston does not supply water to property outside the city limits.

Little Falls and Lockport permit outside connections, provided they conform to the municipal plumbing code.

In Long Beach the water department installs the tap to the curb and places the meter in the cellar on all connections.

No additional charge has ever been made by Mechanicville to property owners outside of the city limits, but it is planned to make such a charge in the near future.

Although service connections outside the city limits are permitted by Middletown, plumbing is not inspected outside of the city.

Mount Vernon does not make service connections to property outside the city limits.

Property owners outside of Newburgh may connect with the city mains without compliance with the municipal plumbing code.

No attempt has been made in New York City to regulate the type of plumbing used. The supply of water to consumers outside of the city limits is furnished chiefly to municipal corporations.

North Tonawanda, Ogdensburg, Oneida and Poughkeepsie all permit service connections to their water mains if the plumbing code is followed, while Oswego requires that outside services be metered.

Rochester does not exercise jurisdiction beyond the insertion of the tap, character of the service and the curb cock or controlling valve on service connections outside the city limits.

In Rome all property outside the city limits desiring connections with the city mains is carefully inspected for leaks and added fixtures.

Salamanca does not serve property outside the municipal limits with water.

Persons outside the city limits of Schenectady desiring a supply of water in a private main or supply pipe must comply with the rules and regulations of the Bureau of Water and must pay for the water at rates prescribed by the Commissioner of Public Works with the approval of the Board of Estimate and Apportionment. Any addition to or connection with such private mains or supply pipes for the purpose of supplying water to other premises may not be made until a written permit is granted by the owner of the pipes and a copy of the permit filed with the Bureau of Water. The Bureau of Water reserves the right to refuse to permit such connections and to discontinue the supply of water at any time. Schenectady further requires that all work on connecting the supply pipes and fixtures shall be done only by employees of the Bureau of Water or by bonded plumbers. Application for permits must be made in writing and the water rent must be paid in advance by the building contractor or the plumber making the connection.

Syracuse does not service property outside the city limits.

Tonawanda requires that services outside the municipal limits be metered and this also applies to Albion.

Watertown and Yonkers permit connections with outside property if the plumbing code is adhered to.

Reports from Villages

Catskill does not regulate the type of plumbing, but requires that water users outside the village limits use specified service connections to the property line or shut-off box.

Fredonia and Hoosick Falls permit service connections to property outside the municipal limits if the plumbing regulations are followed, while Herkimer and Kenmore do not supply water to outside consumers.

Freeport requires that all outside service connections comply with the village water-board rules.

In Johnson City there are no rules or regulations governing the installation of plumbing fixtures.

Lancaster, also, has no plumbing code and no regulations, all water taps being made by the village.

Malone, Penn Yan, Tarrytown and Waverly permit service connections outside the municipal units if the plumbing conforms to the municipal regulations.

Newark has no municipal plumbing code and there are no regulations regarding plumbing in Ossining, although both these communities permit connections for water to property owners outside the municipal limits.

In Peekskill, the water is metered before it leaves the village.

Saranac Lake allows water service connections with its main by property owners outside its municipal limits, basing the water charge on the number of bedrooms and 100 per cent additional.

Scarsdale requires compliance with local codes, the village controlling the kind of material in service lines and meters.

Seneca Falls has no plumbing code, although all connections must be made by the village, which specifies the type of curb and corporation cocks to be used.

Dollar for Dollar
or Yard for Yard

The NELSON SNOW LOADER

for High-Speed Snow Removal

will load more snow for less money than any other snow-loading equipment made

That is why there are more Nelson Snow Loaders in use than all others put together

The N. P. NELSON IRON WORKS, Inc.

822 Bloomfield Avenue **Passaic, N. J.**

it does not pay to shovel by hand when one Nelson

does the work of a hundred men

AIRPORTS AND AVIATION

A Monthly Department on Aeronautical Activities of Municipal Interest
Conducted by ARCHIBALD BLACK, President, Black & Bigelow, Inc., Air Transport Engineers

The R-101 Disaster

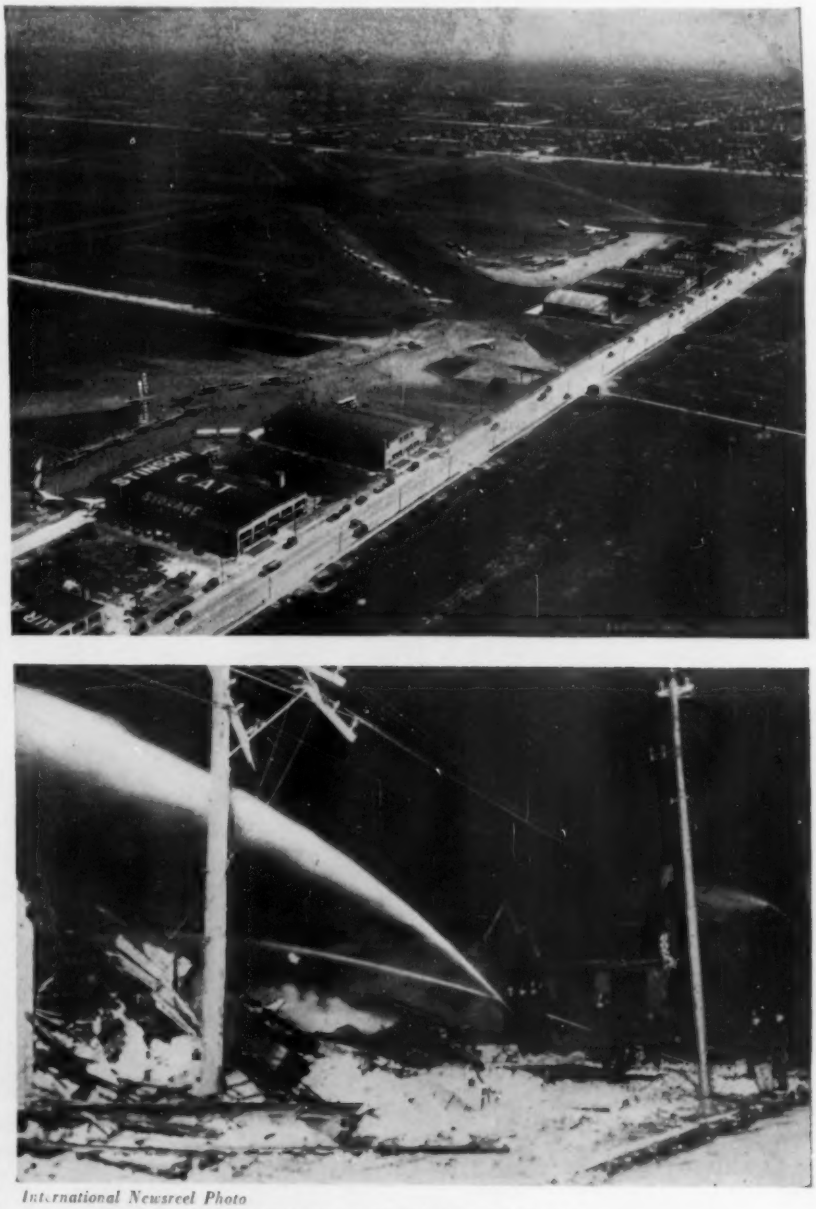
THE crash and subsequent burning of the British airship R-101 at Beauvais, France, on October 5, brought to a tragic end one of the two giant airships constructed by the British in their drive for commercial supremacy in the airship field. So far as can be judged by present reports, the crash of the R-101 seems to have been due to some structural failure which may have been minor but which, combined with the low altitude and bad weather, resulted in its striking a hill while moving at considerable speed. Most of the lives were lost through the subsequent fire due to burning of the hydrogen gas used for buoyancy.

This disaster stands out as the worst to date in the history of aeronautical development, the death list totaling forty-seven, including some of the most important men in the British Air Ministry. Among those lost were Lord Thomson, Secretary of State for Air; Sir Sefton Brancker, Director of Civil Aviation; Wing Commander R. B. B. Colmore; Lieutenant-Colonel V. C. Richmond; Major G. H. Scott; and several others. Some of these men are well known to Americans, having within the past few years been visitors to this country.

It is difficult at this time to say just how far-reaching the effect of the disaster may be. In the last issue of THE AMERICAN CITY, in commenting upon the flight of the sister ship, the R-100, some reference was made to the plans of the British to establish a regular commercial service across the Atlantic and to other parts of the world. It seems quite reasonable to assume that these plans will suffer a very serious setback as the result of this crash. Certainly the disaster will increase objections to the use of hydrogen, despite its advantages of lower cost and greater lift as compared with helium.

Daniel Guggenheim

ON September 28, Daniel Guggenheim, one of the leading copper magnates of the world, died at the age of seventy-four. Mr. Guggenheim was well known as a friend of aviation and during his life established the Guggenheim Fund for the Promotion of Aeronautics, which has been responsible for the establishment of several of the aeronautical colleges in this country. Mr. Guggenheim donated to this fund various sums, estimated as totaling between five and six million dollars, the entire amount being spent in the development of aeronautical education and safety. Several well-known colleges, including Massachusetts Institute of Technology, New York University, University of Michigan and others, have been recipients of substantial sums from the Guggenheim Fund, in the form of endowments to enable them to carry on their work of training engineers in this field. The Fund also financed the $100,000 competition of 1929 for the development of a fool-proof airplane, which resulted in the construction and successful flights of the Curtiss Tanager. It also sponsored and underwrote the good-will tour made by Colonel Lindbergh after his New York to Paris flight in 1927. Mr. Guggenheim will long be remembered by the aviation industry for his contributions to its development.



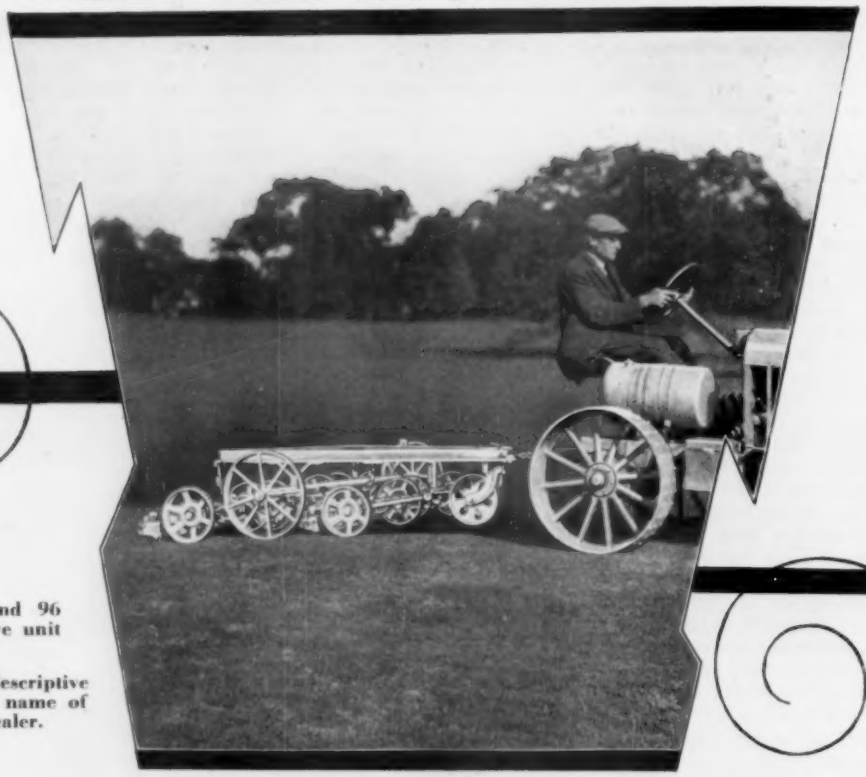
International Newsreel Photo

CHICAGO'S MUNICIPAL AIRPORT FIRE

The air view above was taken but a few weeks before the disaster; the picture below while the firemen were still playing streams of water on the ruins. Fire is believed to have started from a gasoline explosion. The article commencing on page 167 describes preparedness measures against such emergencies, and discusses types of airport fire prevention equipment

SINCE 1867

COLDWELL POWER



Cutting widths, 60 and 96 inches. Three and five unit gangs.

Write for illustrated descriptive literature and for the name of the nearest Coldwell dealer.

Coldwell Gang Lawn Mower— Finest Results With the Least Expense

THIS light-weight Fairway and Park Gang was developed to meet the demand for an inexpensive piece of equipment which combined lightness of weight and draft with extreme flexibility for use on Golf Fairways, Parks, Estates, School and College Campuses and other large lawn areas.

The gang complete weighs less than 500 pounds and may easily be drawn by any of the light-weight tractors or by one fair-sized horse.

The 21-inch cutting units are flexibly attached to the superstructure or frame work so that they oscillate freely in any direction and conform readily to the uneven surface of the ground. Thus the Coldwell Gang is particularly useful on hilly and uneven lawns.

COLDWELL LAWN MOWER COMPANY, NEWBURGH, N. Y., U. S. A.
IN CANADA—TAYLOR-FORBES CO., LTD., GUELPH
Manufacturers of DEPENDABLE Lawn Mowers—HAND, HORSE, GASOLINE, ELECTRIC

State Gasoline Taxes

FOR some time past, air transport operators have been fighting the assessment of state gasoline taxes against fuel used in aircraft, their objections being based on the grounds that these taxes were created for the purpose of highway improvement. Boeing Air Transport, Inc., was one of the companies contesting this fuel tax, and a decree favoring the company was handed down in September by the District Court of Lancaster County, Nebraska. Under the court decree the Treasurer and Attorney-General of the state were permanently enjoined from enforcing compliance with the provision of the state's gasoline tax in the case of gasoline used by the company in the operation of its airplanes over the state.

New Jersey Restricts Seaplanes

DURING September the Board of Commerce and Navigation of the state of New Jersey adopted the policy under which airplanes are prohibited from landing on and taking-off from inland lakes in that state. In defence of this policy it was stated by the President of the Board, J. Spencer Smith, that the practice of landing airplanes without permission on Lake Hopatcong created a menace to small pleasure craft and that as a measure of safety it was decided to extend the prohibition to cover all inland lakes in that state. The Aeronautical Chamber of Commerce, representing the operators affected, has taken up the fight and is endeavoring to have the ruling rescinded or modified. No matter what the outcome, it must be admitted that there has existed among pilots and operators a tendency to ignore the rights and safety of others in the proximity of aviation operation bases. Insufficient attention has been given to the question of decreasing noise; in the case of landing fields, to the elimination of dust; and in the case of seaplane bases to the giving of adequate clearance to surface craft. Despite the injustice of a blanket ruling of this character, some drastic action of this kind seems to have been necessary to bring operators to a full realization of the importance of carrying on their activities with the least amount of menace to others.

Licenses for All Aircraft Urged in New York

AN announcement made on behalf of the State Aviation Commission under date of September 25 advocates compulsory licensing of all airplanes flown in the state of New York and indicates that the next Legislature will be asked to adopt such a law. The present state aviation law requires the licensing only of airplanes flown for commercial purposes, while under the proposed change all airplanes flown within the state would be required to carry licenses. The proposed license would be furnished without charge to any one owning or operating an airplane and would be awarded to any craft which is airworthy. In commenting upon the recommendations of the Commission, Senator Webb stated: "This is simply a move to tighten up on existing regulations covering aviation in New York State and is in line with the efforts of the Aviation Commission to further every plan that will promote the safety of flying.

Municipal Airports Opposed in Camden

IN *Nation's Business*, issue of October 1930, W. L. Hammer records the Aviation Committee of Camden County Chamber of Commerce, Camden, N. J., as having taken a stand against the expending of public funds for the building of a municipal airport for that city. Camden is now well served by a privately owned airport, and the resolution was aimed against the agitation being conducted for a separate municipally owned airport. The resolution reads as follows: "The Aviation Committee of the Camden County Chamber of Commerce favors private ownership as against public ownership in aviation as in other lines of business and therefore opposes the expenditure of public funds for a municipal or county airport, unless Central Airport and other private aviation enterprises which are now fully meeting the community's needs shall fail to do so in the future."

Legislation Is Needed for Highway Sidewalks

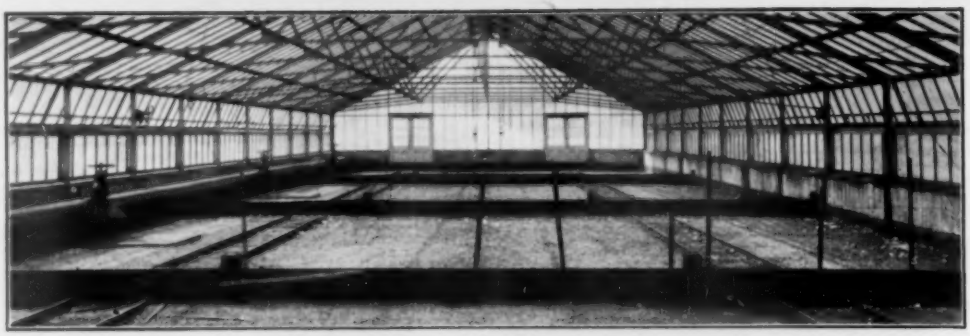
PROTECTION for the pedestrian, and incidentally for the motorist, to whom the pedestrian is frequently a source of accident, is sought by the American Society for Municipal Improvements, through its Committee on Highway Sidewalks. The Committee recommends the enactment by all states of legislation authorizing the construction of footwalks along highways. New Jersey is the only state which has an adequate law; this was passed last spring. A suggested draft has been prepared by the Committee on the basis of the New Jersey measure, which authorizes the construction of paths or sidewalks and curbing along state highways, and sanctions agreements with counties and other municipalities to share the cost of the construction and maintenance. An additional provision has been incorporated in the suggested draft which would make it a misdemeanor for pedestrians to use vehicle roadways except for crossing, after adequate footpaths have been provided.

"In the rush to tax the whole public for the building of roadways for the use of automobiles, the laws of all the states are so framed as not even to permit the use of state funds for walkway construction," stated George C. Warren, Chairman of the Committee on Highway Sidewalks in a report to the American Society for Municipal Improvements at the Society's recent convention in Richmond. The Committee found that there is scarcely a state or county highway in the United States which can be used by pedestrians, because the entire roadways are taken over by the riding public.

HALE STREET, BEVERLY, MASS.
The gravel walk, with top dressing of stone dust and with granite curb, is a State Highway development, and is on Auto Route 127

The Committee recommends that footwalks should have elevation as much as possible above the roadway and as far as practicable from the roadway and shoulders reserved for automobilists, and that the foundations and surfaces be made of any substance such as gravel, crushed stone, locomotive cinders, slag, plank, portland cement concrete or asphaltic construction, as may most economically meet conditions of cost and use in each case. The surface in every instance should be sufficiently firm and true to provide reasonably comfortable walkways. The expense is slight if construction is carried on while the roadway is being graded, but the Committee urges the building of adequate walkways wherever possible even at a relatively greater expense. The statement frequently made that pedestrians would refuse to use highway sidewalks was declared by the Committee to have no basis in fact, since no such sidewalks have yet become available offering continuity and comfort.

Master Construction Glass-Overs for Sludge Beds



Engineer Burnside Tells About the Sharon Sludge Beds

THE Sewage Treatment Works of Sharon, Pa., was constructed and placed in operation in the Fall of 1927 and it is designed for a population of 25,000. Included in this plant are two sludge beds having greenhouse glass-overs which were manufactured and erected by Lord & Burnham. Each sludge bed is 40 feet wide and 125 feet in length making a total area of 10,000 square feet of sludge beds which is equivalent to 4/10 square feet per capita.

The requirement of our State Health Department for sludge drying bed area is one square foot per capita for uncovered beds and 4/10 square foot for covered beds. In our case the cost of the construction of the sludge beds with glass-overs *was cheaper than for the open beds.* This construction also gave the advantage of application of sludge to the beds during the cold weather months.

There is nothing peculiar to these sludge beds in the way of construction other than the use of crushed slag in the filtering media. This filter bed is built up of crushed blast furnace slag using from 2½-inch to ¼-inch size (from bottom up) for a depth of 16 inches covered by one inch of pea gravel and three inches of sand at top. Three lines of four-inch drain tile laid on 13-foot centers and running longitudinally, emptying into a six-inch line laid transversally on the center axis with the sludge beds, provide for the liquid drainage of the sludge beds.

Sludge placed upon these beds in cold weather months with temperatures from zero to 32 degrees are in shape for removal in from 30 to 45 days depending upon the amount of sunshine occurring in the period. In spring, summer and fall months the time requirement for the sludge period on the beds will vary from 21 to 30 days.

In the photographs of these beds which I sent to you some time ago you will note that the concrete walls supporting the glass-overs are carried up above the ground, this height being about 2¼ feet. This was done in order to place the concrete walls above any possible height of flood waters from the adjacent river such as occurred once in this section in 1913. This is mentioned to answer a possible question as to reason for not having the sides of the glass-overs at level close to that of the surrounding grounds.

The Glass-Over is the Master Construction, a development of our three quarters of a century and more experience, specializing in Glass structures.

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Correct Fire Protection for Airports Requires Careful Study

TEN years ago airplanes were still in an experimental stage, so far as general use was concerned, and, despite the fact that they had performed valuable service in the war, the general public was still skeptical of them and loath to believe that the airplane would ever become an important unit in our transportation system.

Today aviation has become a business—a *big* business and, like every other great industry, it must do everything in its power to utilize all possible facilities affecting safety, economy and uninterrupted service. One of the most important of these factors—fire protection—is the subject of this article.

It should be remembered that no other transportation industry today concentrates as great a proportion of its investment in single fire zones as does the airport industry. The truth of this statement is readily apparent when we consider that hangar areas are daily increasing and that, in many cases, a single large hangar contains the entire facilities of one or more transport companies. Often these hangars house a large number of planes which, to conserve space, are stored closely together. Obviously, this means that the hangar and its entire contents are endangered in case of fire and that a devastating fire would result not only in a large financial loss but also in a crippling of the service of the company or companies affected. Too often, as even a casual study of airport fires will disclose, the investment in adequate first-aid fire-fighting devices is usually far from being proportionate to the investment represented in the risk involved.

Types of Hazard and Types of Equipment

Just what is "adequate" fire fighting equipment? It means not only enough devices but, more important, those of the right type. Fire protection does not consist merely of the haphazard selection and placing of fire extinguishers, for the kind of hazard has a definite bearing on the type of equipment. For illustration, while one type of fire extinguisher would quickly quench a fire in a curtain in the airport administration building, the same device might fail on a fire in a hangar involving oil or gasoline saturated material.

Keeping this in mind, it seems necessary, before proceeding with a general discussion of airport fire protection and the first-aid fire-extinguishing devices, to consider some of the most common hazards which we may expect to find about an airport.

We may dismiss the hazards of administration buildings, pilot's quarters and similar buildings about the airport in a few words, for they are naturally less acute than those found in hangars, repair shops and on the field itself. They consists primarily of heating plants, electrical wiring and, in brief, the common fire hazards which are found in an ordinary office building or residence. However, the fact that these risks are less hazardous does not make them immune from fire and, accordingly, they should be given due consideration when fire protection for an airport is being considered.

Hangar and Repair Shop Hazards

Now we come to the fire hazards of the hangar, repair shop and field itself. It is obvious that the starting of motors in hangars is dangerous practice and should never be indulged in. However, it is common knowledge that this is done, particularly in cold weather. Occasionally too, planes are nosed into hangars under power when a storm necessitates their being placed under cover in quick time.

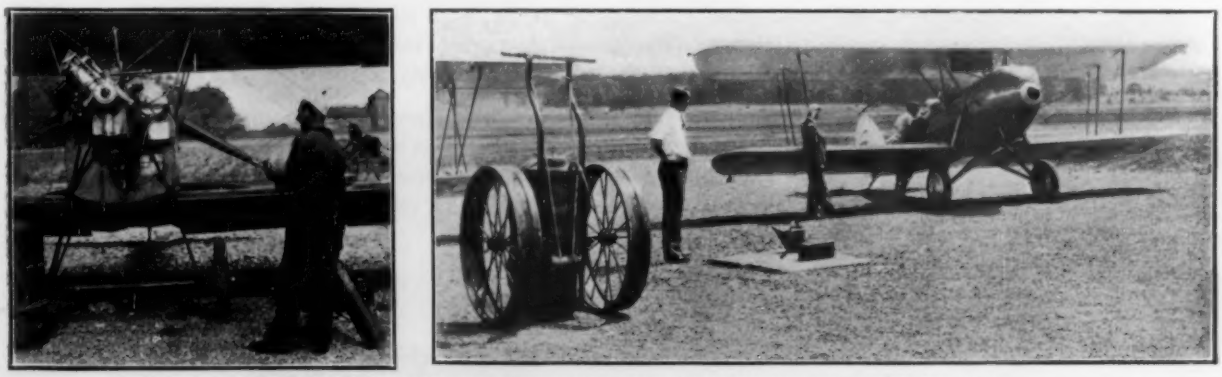
Another equally dangerous practice, and one that has been responsible for a number of airport fires, is that of repairing planes in hangars. Of course, at most large airports such work is done in separate buildings. At many of the smaller airports, however, the repair shop consists usually of a corner of the hangar or a room directly adjacent to it. When it is considered that in addition to ordinary repair work, small-scale oxyacetylene welding, paint spraying and washing of parts in gasoline and other highly inflammable and volatile fluids, is often carried on, it may be readily seen that failure to isolate the repair shop from the hangar is a fire-inviting practice.

In addition to the repair shop hazards described, there is the serious fire hazard incident to "doping" wings, fuselages, etc. "Dope," which is applied to the fabric to tighten it and make it more durable, consists of cellulose nitrate or cellulose acetate usually dissolved in a volatile solvent which gives off explosive vapors at temperatures even under 100 degrees F. Frequently, in order to hasten the drying process of "dope," electric heaters have been used. It seems hardly necessary to point out that this is a most hazardous practice and one that has been responsible for a number of fires.

Fire protection for the airport is greatly simplified when hazards are isolated. For example, a "doping" room, properly laid out in a separate and isolated building, presents very much less of a problem than if it were housed in a part of the hangar. This also applies to repair shops, painting rooms, engine test rooms, etc.

Field Hazards

Besides the various fire hazards which are found in the buildings about an airport, there are operations conducted out-of-doors which may cause fire. For illustration, fire may occur while planes are being refueled, warmed up preliminary to flight, washed with inflammable and volatile liquids, or during minor re-



TWO EQUALLY INDISPENSABLE TYPES OF FIRE EXTINGUISHERS FOR AIRPORT USE

The small portable carbon-dioxide device shown at the left is invaluable for fighting the incipient fires which frequently occur when a motor is being overhauled

The 40-gallon foam-type fire-fighting engine is a device which should be on hand when planes are being warmed up on the field, or minor adjustments and repairs are being made

. . . Out of Reach . Out of Luck . . .

GOOD roads are as beneficial to the farmer in a business sense as they are to the motorist in a pleasure sense. Almost any rural community that will plan ahead can obtain the right Tarvia roads as easily as urban centers obtain the more advanced Tarvia pavements.

If communities wait until they have all the money for roads that they would like to have, out-of-reach, out-of-luck farmers are going to be much more numerous than they are now.

The Tarvia organization, with its 26 years of road-building experience, offers practical, money-saving cooperation to road officials who must make a little road money do the work of a lot.

Tarvia field men can show you how to meet immediate—and future—needs inexpensively. With Tarvia a road can be developed and widened through successive stages, keeping it at all times suited to the load it must carry. For further information 'phone, wire or write our nearest office.

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GOOD ROADS AT LOW COST

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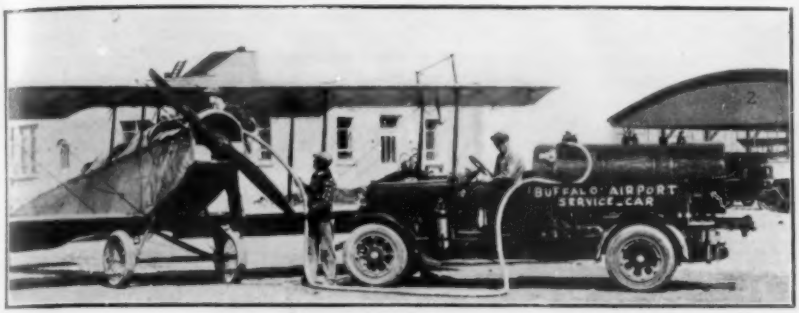

TWO MOUNTED FOAM-TYPE EXTINGUISHERS

The illustration to the left shows a special service car with a foam-type extinguisher mounted on the dash ready instantly in a refueling fire emergency. Even such small devices can often extinguish potentially serious fires

The automobile shown in the illustration at the right is equipped with tanks fitted for discharging 600 gallons of foam. Such a unit is within the means of even the modest airport and is vital to efficient aid in "crash" fires on the field

pairs and adjustments. This may be due to any of several causes. Static charges of electricity have caused disastrous fires during refueling operations. Fire from exhaust manifolds has ignited inflammable liquid or fabrics. The careless tossing of a cigarette stub or a match has resulted in a raging inferno in the twinkling of an eye, and backfires, particularly with stubborn motors in cold weather, have transmitted fire to the plane despite the development of backfire traps, flame arresters and other safety devices.

One of the most serious fire hazards about the airport is the "crash fire," for such fires may result not only in the complete loss of a plane, but frequently in the lives of pilots and passengers. As the name suggests, a "crash" fire occurs when a plane falls to the ground out of control and the force of the impact ruptures its gasoline tank, thus liberating large quantities of gasoline over the machine and surrounding ground. Such fires burn with terrible intensity and must be extinguished in the quickest possible time. This type of fire and the most effective methods of combating it, will be considered later on in this article.

First-Aid Fire-Extinguishing Devices

We have now considered in a general way some of the most common fire hazards incident to the airport. Now let us discuss the various types of first-aid fire-extinguishing devices which are suitable for combating the type of risks involved. During this discussion it should be borne in mind that, fundamentally, fire is extinguished in only two ways—either by cooling the burning substance below the temperature necessary for combustion, or by smothering it and thus depriving it of the air necessary for combustion. Water, and extinguishers using soda-acid and non-freeze solutions, extinguish fire by their cooling action. Foam type extinguishers extinguish principally by their smothering action. However, they also have a cooling effect. Devices which employ inert gases, such as carbon dioxide and carbon tetrachloride, also act on the smothering principle by so diluting the oxygen contact of the air about the burning material that combustion cannot be supported.

The foam type extinguisher is generally considered to be the best all-around type for airport use. This is due to several reasons, a principal one being that the foam type extinguisher is effective for extinguishing fires not only in ordinary free-burning materials, but also in inflammable and highly volatile substances. All foam-producing devices discharge a frothy, lather-like substance made up of millions of minute, heat-resisting bubbles charged with carbon dioxide gas. Foam is the result of a chemical reaction between solutions of aluminum sulphate and of bicarbonate of soda with a foaming agent. When introduced on a burning substance, whether it be a pan of gasoline, an airplane wing or a hangar wall, it coats it with an airtight blanket which excludes the oxygen and thus smothers the fire.

Carbon dioxide, like foam equipment, also extinguishes fire by smothering. The carbon dioxide gas, in a liquid state, is stored in steel cylinders. When it is released, however, it immediately reverts into a gas which envelopes the fire area. Being a gas, carbon dioxide is three-dimensional in its properties and therefore is able to penetrate into every crack and crevice where fire exists. Although there is no question that carbon dioxide gas has its place in the scheme of fire protection for the airport, it has a number of limitations which should be understood. One of these is its short range which makes it necessary for the operator to approach close to the fire, where he must take the most punishment from heat. Also, it must be remembered that when carbon dioxide is used as an extinguishing agent, the fire must be completely enveloped by the suffocating blanket of gas until the burning material has been cooled below the re-ignition point. If this is not done, the fire will invariably reflash and thus assume all its original intensity. In view of these facts, it is therefore obvious that carbon dioxide equipment should be used principally in hangars and places where, because of the absence of wind and drafts, the concentration of gas may be maintained for a sufficient period without being dissipated.

In some ways, the action of carbon tetrachloride in extinguishing fire is similar to that of carbon dioxide. However, the small quantity of fluid contained in this type of extinguisher and the fact that, like carbon dioxide, it is easily dissipated by wind and drafts, makes it suited for use only on small fires in confined places. The fluid discharged by this type of extinguisher is vaporized by the heat of the fire and reverts into an inert gas which, like carbon dioxide, extinguishes the fire by smothering it.

The discharge from a soda-acid extinguisher has practically the same fire-fighting value as so much water discharge under pressure. Because it has practically no blanketing action, devices which use soda and acid are not suited for extinguishing fires in inflammable liquids and therefore have no place in the hangar, repair shop or, in fact, in any location about the airport where gasoline or similar inflammables are liable to be in use.

A FOAM-TYPE HAND EXTINGUISHER IN USE

This is a 5-gallon hand-operated device. At the right of the plane is a 40-gallon foam engine adequate for the fighting of larger fires

A 20-Year Culvert Veteran of Toncan Iron

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Today it is still in use and sound as a dollar.

This culvert was a long step towards permanence but the Toncan Iron culvert of today has been still further improved. Toncan Iron now has its resistance to rust and corrosion fortified by the addition of Copper and Molybdenum. This improved alloy insures far longer life in service. No other culvert can equal the years of satisfactory service obtained by using Toncan Iron.

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The Second Line of Defense

The four types of extinguishers discussed thus far, namely, foam, carbon dioxide, carbon tetrachloride, and soda-acid, come exclusively under the listing of first-aid devices and are the "first line of defense" against fire. Efficient and necessary as such devices are, a "second line of defense," in the form of larger units with correspondingly greater extinguishing capacity, should always be provided. These larger units include the larger types of carbon dioxide extinguishers, 40-gallon foam engines, devices known as foam generators and (at the larger airports) motor fire apparatus units equipped with fire pumps, foam generators, portable extingiushers and complete fire-fighting tools.

A typical carbon dioxide unit of the larger type might consist of one or more cylinders of gas mounted on wheels for mobility and supplied with high-pressure, flexible metal discharge lines leading from the unit to suitable discharge nozzles. In units of this type the cylinder (or cylinders) is usually charged with 50 pounds of liquid gas which, upon release, produces approximately 450 cubic feet of free gas.

Essentially, the foam type 40-gallon engine is a large model of the foam hand extinguisher. These engines are mounted on wheels and provided with pulling ropes for easy mobility. The device, owing to the expanding properties of the foam solutions, discharges approximately 300 gallons of foam at an effective range of from 50 to 60 feet. The duration of the discharge is about three minutes. These devices are made in models for both indoor and outdoor use.

Foam generators are devices which will produce a continuous stream of foam for long periods. Foam chemicals, in a dry powdered state, are poured into a hopper or charging funnel which is affixed to the top of the generator. Water rushing through the body of the generator draws this powder into the water stream, a chemical reaction takes place and foam is produced. Generators suitable for airport use weigh less than 100 pounds and are therefore readily portable. They can be used wherever a water-supply with sufficient pressure to operate the unit is available and, as long as the hopper is kept filled with the foam powder, foam will be produced. Portable generators of the type described are available which will produce as much as 1,500 gallons of foam per minute.

How Much Equipment Is Needed?

Obviously, it is impossible to recommend adequate fire protection which will cover all types and sizes of airports. Equipment which would be sufficient to protect the small airport might be inadequate for the large airport. For purposes of illustration, therefore, we will consider fire protection for one hangar, which might be the sole building on the field or one of several. There are no definite requirements as to the number of 2½-gallon extinguishers which should be installed in such a building. It is recommended, however, that one extinguisher be furnished for each 2,000 square feet of floor space. In addition, every subdivision or independent fire hazard in the hangar should be supplied with at least one extinguisher. This may be considered as the minimum requirement. In addition to portable equipment, every hangar and large repair shop at an airport should be equipped with at least one 40-gallon foam type engine for fighting fires beyond the capacity of the smaller units.

As has already been stated, there are only three types of extinguishers suitable for protecting fire hazards of hangars and repair shops. They are foam, carbon dioxide, and carbon tetrachloride. The first two types have an equal efficiency rating for fires in extra-hazardous risks. Carbon tetrachloride extinguishers, because of their relatively small capacity, are unsuited for use on anything but small fires. Extinguishers of this type should be installed at frequent intervals along work-benches where welding and torch work is carried on. Small fires in motor compartments may also be extinguished by the discharge of a carbon tetrachloride extinguisher.

Fire Protection for the Landing Field

This brings us to a consideration of fire protection for the landing field itself. As has been indicated before, the greatest hazard on the field is the "crash fire," for failure to extinguish fires of this type in the absolute minimum of time may result in a loss of life, in addition to complete destruction of the plane involved.

Various units are available for fighting the crash fire in the form of motorized apparatus equipped with foam tanks of large capacity, a number of carbon dioxide cylinders, linked together to form a battery, in addition to a wrecking crane and complete fire-fighting tools. Such units may also be equipped with foam generators. In such installations, the generators are mounted on the running-board of the apparatus and are supplied with water at the required pressure and volume by means of a "booster" water-tank and pump carried on the apparatus. The foam is discharged through 100 feet of hose line with a range of from 50 to 90 feet, depending on the size of the generator used. A typical installation of this type will produce one thousand or more gallons of foam in two minutes.

Obviously, the small airport could not support such elaborate equipment. It could, however, employ carbon dioxide and foam equipment in proportion to its size. Double foam tanks, or one or more carbon dioxide cylinders, in addition to portable extinguishers, may be mounted on almost any type of automobile chassis. Wide-tired foam engines with pulling handles and ropes also are well within the means of the smaller airport and are valuable fire-fighting devices for use in combating the "crash fire." Smaller first-aid equipment may also be carried on the airport manager's car, as well as on the various other vehicles in use about the airport.

Automatic Sprinklers*

Although at the present time opinion is divided as to the effectiveness of water sprinkler systems, it would seem that these devices have a place in the fire protection scheme in large hangars. Of course, it is a generally known fact that water is practically useless as an extinguishing agent for fires in gasoline and other highly inflammable liquids and materials. However, records indicate that many hangar fires in their incipiency do not involve inflammable liquids. Therefore, in many cases, an automatic sprinkler system would extinguish such fires before they had an opportunity to spread to airplanes and inflammable liquids. How effective such systems would be in combating a fire which involved highly inflammable liquids and materials at its very outset, is impossible to state definitely at this time. It seems likely, however, that their discharge would reduce the intensity of the fire or control it until extinguishing agents other than water could be brought into play.

It seems hardly necessary to state that all fire-extinguishing equipment should be properly maintained. Foam type extinguishers should be discharged and recharged at least once a year to make sure they are in good working order. Soda acid extinguishers also require recharging at least once a year. Carbon tetrachloride extinguishers and carbon dioxide extinguishers do not require recharging until used, but both types should be regularly inspected. Foam and soda acid devices are subject to freezing in cold weather and this must be guarded against. Carbon tetrachloride and carbon dioxide extinguishers will not freeze even in the coldest temperatures.

No Place for Guesswork

In addition to the proper maintenance of extinguishing devices, every employee at an airport should be thoroughly versed in the operation of the various devices and have a general knowledge of their fire-extinguishing action, as well as the fire-extinguishing capacity of each device.

Correct fire protection should be determined by definite and concrete facts, based on a careful and detailed study of the fire hazards involved. Accordingly, when an airport contemplates the purchase of fire-fighting equipment, the management should call in a trained fire protection engineer to make a complete survey of the entire property. Such a service may be had gratis, for leading manufacturers of fire-fighting equipment will gladly send a trained engineer who will inspect an airport and then submit written recommendations. In the event that equipment is purchased, he will supervise its installation, in addition to instructing the port's personnel in its use. use.

ACKNOWLEDGMENT.—The foregoing article was prepared from data compiled by engineers of the American-LaFrance and Foamite Corporation, of Elmira, N. Y., who have made a comprehensive study of the complex problems of fire protection and fire prevention for airports.

* See also Airports and Aviation department.

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THE TAXPAYER'S DOLLAR

A Monthly Department of Budgeting, Assessment, Taxation, Accounting and Other Phases of Municipal Finance Conducted by A. E. BUCK, National Institute of Public Administration, New York

Father Knickerbocker Looks Over Next Year's Budget

AMID charges of graft, official corruption, and wholesale racketeering, Father Knickerbocker again adjusts his glasses to examine the tentative budget of the city government of New York for 1931, which was submitted to the Board of Estimate and Apportionment on October 10. He finds that it calls for an expenditure of $615,869,038, which is over $46,000,000 more than the budget for the current year. This means a basic tax rate of $2.64, as compared with $2.53 for the current year. If $15,000,000 is added to the tentative budget, which seems likely after the public hearings are held, the basic tax rate for 1931 will probably be near $2.70. And this in spite of the fact that there is an increase of $769,000,000 in the city's tentative tax rolls for 1931, making a total valuation of $18,408,683,307.

Mayor Walker has issued a message with the tentative budget for 1931 in which he has divided the increase of $46,000,000 into four categories—debt service, mandatory, obligatory and discretionary. Only $6,800,000 of this increase is "discretionary." With reference to the amounts included in the other three categories, the inference is that the Mayor and his associates are without discretion either now or at any time in the past. "But," says the *New York Times*, "in many instances they forged their own chains." More than half of the increase in debt service is attributable to the administration's effort to save the five-cent fare on the new municipal subway. Increases in pension funds, on account of "ancient and extravagant pension systems," have also contributed.

Commenting on the 1931 budget, the *New York World* says: "All in all, this huge increase in expenditures, with the necessarily higher tax rate, in a period when business activity is subnormal, is not a cheerful prospect, and it supplies a further argument, if one were needed, for the thorough reorganization of the city government, long promised but never achieved."

Many Florida Cities Default on Bonds

MORE than forty Florida cities are reported to have recently defaulted on their bonds. Among these are such important municipalities as Miami, St. Petersburg, Coral Gables, Fort Lauderdale, Daytona Beach, West Palm Beach, Sarasota, Clearwater, St. Augustine, Titusville, Bradenton, and Lake Worth. Miami defaulted on an $180,000 bond issue due August 1. It has the largest bonded indebtedness of any city in the state, and St. Petersburg is second. Miami had its bonds recognized on the New York legal list.

Florida cities have had several misfortunes during the past few years, notably the collapse of the real estate boom in 1925, hurricanes in ensuing years, invasion of the Mediterranean fruit fly in 1929, and numerous bank failures during the last biennium. They have also had great difficulty in collecting taxes, which in many cases were levied on the inflated values of five years ago. The accumulated back taxes are greater than the value of the property in many instances. Further difficulties lie in the inequitable assessment system and in the multiplicity of special improvement districts. Cases are reported where the valuation of property for state and county purposes is only 10 per cent of full value, while the valuation for city purposes is purposes is only 10 per cent of full value. The special districts create a situation under which some territorial areas have had bonds issued against them by as many as twelve different borrowing units. These bonds aggregate, in some cases, far more than the true and full value of the property itself.

A special committee of the Florida League of Municipalities has recommended, as a way out of the situation, a general sales tax on tobacco, theater tickets, sporting events, night club and other admissions, club dues, candy and chewing gum, playing cards, toilet soap, cosmetics, perfumes, soft drinks, and some other so-called luxuries. The committee also favored a rigid constitutional limitation upon the power of local units of government to incur indebtedness. It argued that this limit should apply to definite territorial areas and not to political subdivisions, so as to preevnt special taxing and local improvement districts from being superimposed one upon the other.

Improper Administration of Sinking-Funds in Hamilton County, Tenn.

THE Taxation Committee of the Chattanooga Chamber of Commerce points out that the sinking-fund of Hamilton County, wherein Chattanooga is located, is not being properly managed. It shows that the county sinking-fund should have contained on June 30, 1930, $1,450,942.03, if actuarially computed, when as a matter of fact it had on that date only $14,578.51. Furthermore, the Committee states that $106,989.23 should be set aside in the sinking-fund this year to meet current requirements alone, exclusive of the accumulated deficiency. If both current requirements and this year's proportion of the deficiency, which, as indicated above, amounts to almost a million and a half dollars, are to be met, then $308,875.61 should be set aside in the sinking-fund this year. These figures disregard the $14,578.51 actually in the fund, which, the committee says, is negligible as compared with the amount that should be in it.

The Committee recommends that the county authorities begin immediately to restore the sinking-fund. As a final comment on the situation, the Committee says: "Proper administration of the sinking-fund in past years would have distributed the cost in such a way that it would not have been an excessive burden on the taxpayers at any time. The present generation of taxpayers must now contribute more than their proportionate share of the debt to make up for the deficiency in the earlier payments plus the interest thereon which would have been accumulating through the years, had the proper payments been made."

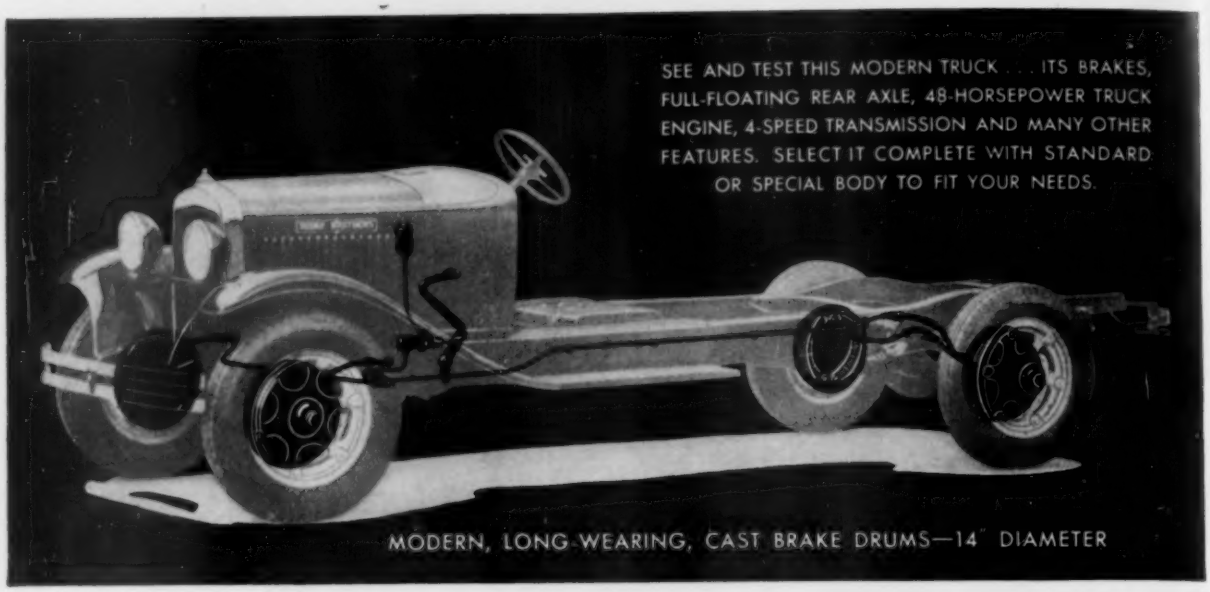
Milwaukee Report to Serve as Basis for Long-Term Program

THE Citizens' Bureau of Milwaukee has issued an 88-page mimeographed report on the major financial phases of the city government, which is intended to serve as the basis for a long-term program. The city's finances are analyzed for the past ten years, and a tentative "appraisal of the possibilities" for the next ten years is included. The Bureau hopes that this report "can be utilized to secure more orderly development in the future than has been enjoyed in the past."

The thing that immediately inspired this report seems to have been the special assessment situation in the city. The Council has already approved some 200 plans for the opening and widening of streets and alleys. This work awaits the passage of a special assessment and condemnation law, which is being drafted for submission to the 1931 Wisconsin Legislature. The Bureau thinks a sequence for carrying out the work which the Council has approved should be ordered, so that the strain put on the new law will not discredit it, although it might work well under ordinary circumstances. Hence the urgent need for a long-term plan.

Special Assessment Difficulties in Flint, Mich.

CARL H. CHATTERS, Director of Finance of Flint, Mich., writing in the August issue of *The Tax Digest*, says that a survey of the 1928 general tax roll of that city showed delinquent taxes on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21,683 parcels of property out of a total number of 61,951, or more than a third of the pieces of property in the city at the time the returns were made to the County Treasurer. Mr. Chatters attributes this situation largely to the unrestricted levying of special assessments. He says that the total amount of special assessments is large as compared with the general tax levied. During the last three years approximately $2,000,000 of special assessments have been levied. For the past ten years the total amount of special assessment levies, Mr. Chatters estimates, would exceed $10,000,000. An examination of the tax rolls reveals that there are several hundred properties on which the delinquent special assessment taxes plus the special assessments levied and due in future years are greater than, or almost equal to, the assessed valuation. These rolls show that some properties had as many as four or five special assessments levied against them in one year.

Mr. Chatters thinks this situation should be remedied at once. He proposes (1) a careful study of every proposed special assessment improvement from the standpoint of the ability and willingness of the property owners to pay, (2) a curtailment of the classes of improvements showing an unusual percentage of delinquency, and (3) the elimination of special assessments from sections entirely undeveloped, unless the property owners make a deposit covering the cost of the proposed improvement.

Scientific Assessing Reduces Town's Tax Rate

NATICK, MASS., is reported to have reduced its tax rate from $49.40 to $30.75 as a result of the assessment system installed by the Town Assessor, Fred J. Lucey. Under the "Lucey system," as it is called locally, the tax assessors cannot play favorites. Every taxpayer in the town must pay according to a fixed schedule of property values.

Mr. Lucey adapted the "block system" to his town. The entire area of the town was laid out in squares, and a scale of values was set for each block. This was ascertained by taking a representative business block in the center of the town and fixing a value on it. Values for residential areas were established in the same way.

Minnesota League of Municipalities Produces a Notable Year Book

UNDER the leadership of Morris B. Lambie, the Minnesota League of Municipalities has recently published its first Year Book. As an initial effort, this book ranks high. It carries 326 pages, with illustrations, diagrams and tables. It is well printed and cloth bound. While it deals mainly with the structure and functions of the government of Minnesota—state, county, city and village, it devotes considerable space to taxation and finance, public utilities, fire insurance rates, and election processes.

The state government is discussed at some length, with charts of the various administrative departments and agencies. Emphasis is placed on the financial activities of the state. A comprehensive outline of the state tax system is presented. In the space of about 50 pages one gets a very good picture of the state government. Following this is a discussion of county, city and village government in Minnesota. Illuminating charts of the organization of typical county, city, and village governments are presented.

The section on taxation and finance discusses methods of determining tax rates. It contains valuable tables on tax rates, assessed valuations, indebtedness, and special assessments in cities and villages. Much of this information has been reduced to chart form.

The Municipal Bond Market

By SANDERS SHANKS, Jr.
Editor, The Bond Buyer

WEEK after week, municipal bond prices continue to advance to new high levels. As this is written, prices are almost back at the peak from which the decline of 1928 and 1929 started. Are they going back to the level of 1900 to 1910; in other words to basis prices ranging from 3¼ to 3¾ per cent for bonds of states and the larger cities? Certainly they are headed in that direction and have made a most impressive start during the current year, particularly in recent weeks.

Twenty-five years ago, without the benefit of income tax exemption, New York City bonds sold on a 3½ per cent basis. The credit rating of cities such as Philadelphia, Detroit, St. Louis, Buffalo, Baltimore and Newark was even higher. Such values have not been seen since, although in the early weeks of 1928 the average basis price of bonds of 20 large cities broke through a 3.90 per cent.

Only a year or so ago it was not uncommon to be told by investment brokers that municipal bonds were out of fashion—unpopular. That states and cities could not issue stocks, or dress their bonds up with warrants, rights or something of the sort, was considered a regrettable fact. Today, about the only form of investment that is salable is a high-grade bond of the good old-fashioned variety. When the recent experience of investors in real estate mortgages, common stocks, convertible bonds, investment trust shares and foreign bonds is reviewed, one cannot but be strikingly impressed with the inevitability of the revival of interest in those securities which offer the ultimate in safety. Not in years, in fact at no time since that period of high bond prices to which reference is made above, have other opportunities for investment offered state and municipal securities so little competition. How long this state of affairs is to continue is of course a matter of opinion. The business depression may soon be a thing of the past. Conditions in other parts of the world will no doubt respond to reviving prosperity here, the stock market may again see ten-million-share days, but, preceding such developments and as a basic foundation therefor, it seems clear that there must be a restoration of security values starting, as it already has, with governments and municipals, and gradually extending down through all the various grades and classifications of the investment list.

The following table, giving the details of recent sales of new issues, will indicate the current level of municipal bond issues:

Amount	Municipality	Rate (%)	Maturity	Net Basis (%)
$600,000	Worcester, Mass.	3½ & 4	8½ (avg.)	3.58
1,531,000	Cuyahoga Co., Ohio	4	7½ (ser.)	3.98
25,000	Monroe, Wis.	4½	12 (avg.)	4.06
4,000,000	San Francisco, Calif.	4½	8-47 (ser.)	4.07
7,903,000	Paterson, N. J.	4¼	22 1/6 (avg.)	4.16
350,000	Mississippi	4½	20	4.26
20,000	Ypsilanti, Mich.	4½	5 5/6 (avg.)	4.28
50,000	Fort Thomas, Ky.	4½	11¼ (avg.)	4.33
120,000	Barton, Vt.	4½	19 (avg.)	4.46
350,000	Mobile Co., Ala.	4½	18½ (avg.)	4.56
11,000	Antioch, Calif.	5½	12¼ (avg.)	4.77
15,000	Franklin, Idaho	6	10½ (avg.)	5.57
25,000	Ville Platte, La.	6	10 (avg.)	5.95

NEW YORK CITY VOTES RECORD PARK FUND

NO appropriation previously voted in New York—or probably elsewhere in the world— for a like purpose at a single session ever approached the $30,000,000 approved by the Board of Estimate on October 7 for purchase of new park sites and playgrounds. The new program calls for 3,550 acres in new park land and about 100 playgrounds, and will bring the city's total recreation acreage up to approximately 16,000.

The appropriation will be derived from two main sources: $25,000,000 will be issued in corporate stock, and the balance will come from the city's real estate fund, which now amounts to $3,000,000 to $5,000,000. This fund represents the proceeds of municipally owned land which is sold from time to time.

The total sum is expected to be spent within the next three years. Adding to it the $10,000,000 already expended during the present administration in park lands and playgrounds from 1926 through 1929, gives a total of $40,000,000 which will have been expended on the upbuilding of the city's recreation system when the Walker administration completes its present tenure of office in December, 1933.

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Conducted by A. L. H. STREET, Attorney at Law

In Appraising Water System Reproduction Cost, Expense of Cutting and Replacing Pavement Was Properly Disregarded When Not Originally Involved; Straight-Line Method of Computing Depreciation Approved

An award of damages on condemnation of a water system was affirmed by the Washington Supreme Court in the case of *State v. City of Hoquiam*, 286 Pac. 286. On one item of the award, the Court said:

"At the time the water-distributing mains of the city were placed in the ground, no paving was required to be cut and replaced. The cutting and replacing of the pavement, under these circumstances, was not an element of value to which the company was entitled."

The opinion adds:

"It is next contended that the city's witnesses improperly used what is called the straight-line method for the purpose of determining the depreciation. All of the city's engineers who testified had spent a substantial amount of time going over the plant for the purpose of determining its value. When called as witnesses, they took into consideration the observation that they had made, and, together with that, applied the straight-line method of depreciation. That method has frequently been approved by the courts as a proper one. The company's witnesses, with one exception, for the purpose of determining the depreciation applied what is called the observation method. One of them used the sinking-fund method. These various methods are not rules of law but are matters of evidence, and should be considered as such. . . .

"In *Pacific Gas & Electric Co. v. Devlin*, 188 Cal. 33, 203 P. 1058, 1063, the straight-line method of depreciation is approved. It was there said:

" 'If the actual physical condition could be determined by actual test and inspection, that, of course, would give the most satisfactory results; but, in the absence of such direct appraisement, the natural method would seem to be to ascertain from the life table of such utilities and from such examination as can be made, the prospective life of the commodity, and apportion the depreciation according to its age.' "

Recall Petition Held Not Defeated by Attempted Withdrawal of Signers

In a mandamus proceeding to compel calling of an election to recall the Mayor of Las Vegas, Nev., the Nevada Supreme Court said in the case of *State v. Scott*, 285 Pac. 511:

"It is insisted that the withdrawals from the petitions, after they were filed, of the one hundred signatures as alleged in the answers, were legally effected, which left the petitions without the required number of signers and thereby deprived the clerk of authority to call an election. We cannot agree with this view. We are aware of cases of this and analogous character recognizing the right of withdrawal from a petition after it has been filed, if exercised before final action is taken thereon by the officer or board to whom it is addressed. But these have generally been governed by provisions of law differing from our constitutional provision providing for the recall and aiding statute. In so far as it has been held under similar provisions that a petitioner may withdraw from the petition after it has been filed, we cannot agree with the ruling."

Important Legal Decisions

involving municipalities, as reported in this department during 1929, are indexed and classified in the 1930 MUNICIPAL INDEX. This reference list, commencing on page 151 of the 1930 INDEX, supplements lists appearing in the 1929 and 1928 volumes, and covering all decisions reported in this department since its inception in 1924.

City Held Not Liable for Contract to Reimburse Land Company for Cost of Sewers, But Liable for Reasonable Value if the Work Was Incorporated into the City Sewer System

Defendant city's Commissioner of Public Works assured plaintiff land company that the city would reimburse the company for the cost of sewers constructed by it, on funds becoming available for that purpose. A partial payment was made, but later the city repudiated the agreement, because of non-compliance with statutes requiring contracts to be authorized and signed in a certain manner, and requiring them to be awarded on competitive proposals.

In the case of *Abbott Realty Co. v. City of Charlotte*, 152 S. E. 686, the North Carolina Supreme Court decided that while the agreement for reimbursement was void, the city became impliedly obligated for the reasonable value of such part of the sewers as was taken over by it. The Court observed:

"There was evidence tending to show that the Board of Comissioners of defendant city, by the payment to plaintiff of the sum of $3,001.86, ratified the agreement made with plaintiff by the Commissioner of Public Works on defendant city. However, a municipal corporation is not bound by the action of its governing body in ratifying a contract which such body had no power to make in the first instance, or which was made without compliance with statutory provisions which are mandatory with respect to the manner in which such contract may be made. If the law were otherwise, such statutory provisions would be nugatory. . . .

"It does not follow, however, that plaintiff is not entitled to recover in this action. There was evidence tending to show that after the sewers were constructed and paid for by the plaintiff, defendant took them over and incorporated them into its municipal sewerage system. . . . Nothwithstanding the failure of plaintiff to sustain its contention that defendant is liable to it on the contract alleged in the complaint, the defendant should be and is liable for the reasonable and just value of the sewers, if the jury shall find that after their construction defendant took them over and incorporated them into its municipal sewerage system."

Court Denies City Personal Judgment Against Abutters for Cost of Reconstructing Sidewalks

Intimating that a city is confined to a special assessment against abutting property for reimbursement for the expense of building, repairing or rebuilding a sidewalk, the District Court of Appeals for the Third District of California lately held that a city was not entitled to personal judgment against abutters who had disregarded notice to reconstruct a sidewalk. (*City of Marysville v. Freeman*, 285 Pac. 1051.) Concluding with a quotation from a decision of the California Supreme Court, the opinion says:

"A personal judgment against the defendants would become a lien on all their real property in the county, and could be made a lien on their lands in other counties, and their personal property would be subject to sale under execution issued on such judgment, thereby imposing the burden of a local improvement upon all of such property, contrary to the principle on which an assessment for local improvements is based. To say that the owner of land bordering upon an improved street can be made personally liable for the payment of the improvement is equivalent to saying that his entire estate, real, personal and mixed, whether bordering upon the street or remote from it, whether within the corporate limits or without, whether benefited or not, shall be held responsible for the tax, which, in turn, is equivalent to saying that his entire estate may be taxed for the improvement in direct contradiction of the very terms of the power."

Statutory Notice of Damage Claim Held Invalid Because Not Verified by Claimant

A suit against a city for damage resulting from obstruction of a sewer was declared by the New York Court of Appeals to have been properly dismissed because notice of claim, verified, as required by statute, had not been served.

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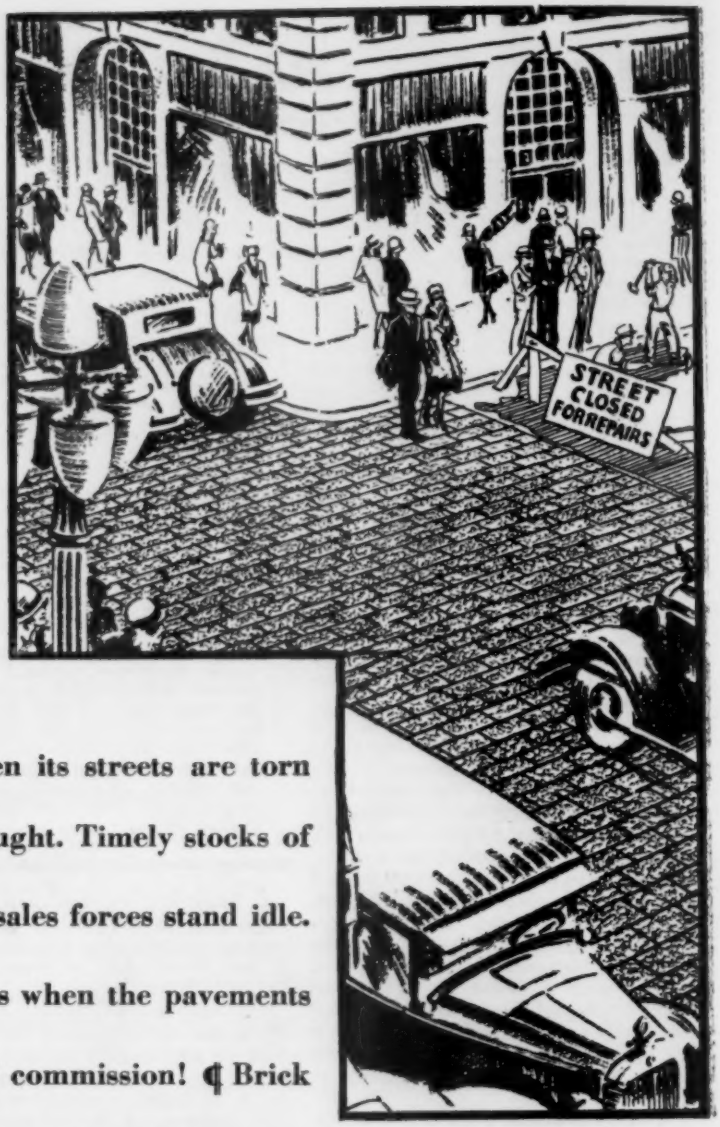

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Notice was served but the verification was not subscribed by claimant. Said the Court, in part (*Ponsrok v. City of Yonkers*, 171 N. E. 917):

"Second Class Cities Law, section 244, provides that the city shall not be liable in a civil action for damages to person or property unless a claim therefor in writing, verified by the oath of the claimant, shall be presented as therein indicated. Municipal liability for injuries is a matter which is within the control of the Legislature, and when it declares upon what such liability shall be predicated, the statutory provisions are controlling. . . . If the notice of claim does not comply with the statutory requirements, if it is not a verified notice of claim, the complaint was properly dismissed. No other form of notice is sufficient. . . .

"The fact that the city has not been prejudiced is immaterial. The Court may not exercise a dispensing power based on the principles of abstract justice fitting the particular case. It may only see that the requirements of the law are complied with. A notice of claim is not 'verified by the oath of the claimant' when the affidavit is subscribed, not by the claimant but by the notary, and the jurat is not subscribed by the notary and is attested only by his official seal."

Allowance of Engineering Fees Held High But Not Excessive

In a case involving the amount recoverable for engineering fees on a sewer improvement job, the Oregon Supreme Court decided that fees of $4,175 were "very high, in view of the amount paid the contractor ($17,523,41)," but they were "not so excessive as to amount to a badge of fraud. The council has wide discretion in such matters." (*Strowbridge v. City of Chiloquin*, 280 Pac. 657).

Ordinance Imposing Regulations Additional to State Pure-Milk Law Held Valid

The Pure Milk Law enacted by the California Legislature in 1927, regulating the production and sale of milk throughout the state, is not so worded as to prohibit cities from imposing additional reasonable regulations, according to the conclusion reached by the California District Court of Appeal in the case of *Witt v. Klimm*, 274 Pac. 1039. The Court held that a San Francisco ordinance requiring milk sold within the city to be pasteurized within the city and county was valid, reasonable and not in conflict with the state law.

As supporting the reasonableness of ordinances requiring milk intended for human consumption to be pasteurized, and that pasteurization plants be equipped in a certain way, the Court quoted from an opinion announced several years ago by the Illinois Supreme Court.

City Held Liable for Damage Done by Negligently Maintained Flume

Defendant city constructed a flume across a water company's canal to care for flood waters coming from gulches in nearby hills. Eight years after the flume was constructed, it broke, owing to decaying of timbers, filling the canal with débris and causing the canal to overflow.

In holding the city liable for resulting injuries to property, the Idaho Supreme Court said in the case of *Dunn v. Boise City*, 283 Pac. 606:

"The city was not an insurer of the condition of its drainage system, but was bound to use ordinary care and skill in constructing and maintaining it. It was likewise bound to take notice of the liability of the timbers to decay from time or use, and to take such measures as ordinary care would dictate to guard against the breaking of the flume across the Boise Water Company's canal because of the decay of timbers used in its construction."

City Held Empowered to Separately Classify Motor-Busses and Taxicabs for Rate Regulation

"The operation of motor-busses under regular schedules, on fixed routes to be approved by the council, differs so materially from operation of taxicabs generally throughout the city, without fixed schedules or restriction in the matter of routes, as to afford proper basis for classification by the municipality in prescribing fares which each may charge for carrying passengers." (*Clem v. City of La Grange*, 149 S. E. 638; Georgia Supreme Court.)

Constitutional Requirement for Election of Chief Executive Held Not to Prevent Appointment of City Manager

A Kentucky statute authorizing the appointment of a city manager by the mayor and commissioners of a city of the first class, does not violate a constitutional requirement for election of the mayor or chief executive by the voters. (*City of Owensboro v. Hazel*, 17 S. W. 2d, 1931.) In this case the Kentucky Court of Appeals said:

"Whoever is designated as the head of the executive branch of the city government must be elected as provided by section 160 of the constitution, but that same constitution in general leaves open to the Legislature the extent of the powers it may wish to confide to such mayor or chief executive.

"The city manager form of government designates the mayor as the head of the executive branch of the city government. True, his powers are greatly curtailed, but the extent of the curtailment is not forbidden by any section of the constitution. As the city manager is not the official head of the city government, but that position is confided to another, it is not necessary under section 160 of the constitution that he be elected by the people."

City Held Not Liable for Flooding of Premises Through Premature Connection with Uncompleted Sewer

Where a sewer system remained incomplete and under the control of the constructing contractor, the city was not liable for flooding of premises which had been prematurely connected with the sewer by the owner of the premises. (*Sisco v. City of Huntsville*, 124 So. 95; Alabama Supreme Court.) The flooding in this case was due to conditions incident to the construction work.

But, concerning municipal liability in general concerning sewers, the Court said:

"A municipality duly authorized to construct and maintain a system of municipal sewers, when undertaking so to do, owes the duty of reasonable and ordinary care to avoid injury to persons and property. While related to the government function of preserving the public health, such improvement and the maintenance thereof involves continuous management.

"To undertake this service, imposing local assessments or other form of taxation for the purpose is to assume a measure of legal duty in its performance. The law, as long declared in this state, deals with it as in the nature of a corporate, rather than a purely government work."

One Forfeiting Office May Be Re-elected in the Absence of Express Prohibition

"It is unquestionably the law that, when an office is forfeited for misconduct, such misconduct and forfeiture does not prevent the appointing or electing power from a reappointment or reelection of the offender, unless the particular misconduct by the express terms of law makes him ineligible for the office." (*Cannon v. Town of Tempe*, 281 Pac. 947, decided by the Arizona Supreme Court.)

Ordinance Limiting Automobile Speed to Four Miles Per Hour in Emerging from Buildings Upheld

"We think that in this age of speed craziness, when so many pedestrians are being killed or crippled by reckless drivers of motor vehicles, a regulation limiting their speed to four miles per hour in driving out of a building and across a sidewalk in a populous city, and requiring the sounding of an alarm, is a reasonable and humane enactment." (*Miks v. Leath*, 26 S. W. 2d, 726, decided by the Texas Court of Civil Appeals.)

Licensing Beverage Dealers

A Chicago ordinance, requiring retail beverage dealers to secure licenses, was sustained by the Illinois Supreme Court in the case of *City of Chicago v. Efantis*, 170 N. E. 766. The Court also held that the fact that defendant's principal business consisted in retailing sandwiches and that he only occasionally served "near beer" did not exempt him from the provisions of the ordinance.

Missouri Cities Held Liable for Negligent Operation of Light Plants

In the case of *Thompson v. City of Lamar*, 17 S. W. 2d, 960, the Missouri Supreme Court decided that, under the statutes of that state, a city owning an electric light plant is liable for injuries resulting from negligent operation. The Court affirmed a $10,000 judgment in favor of a workman who was injured through coming in contact with an uninsulated wire while repairing a roof.

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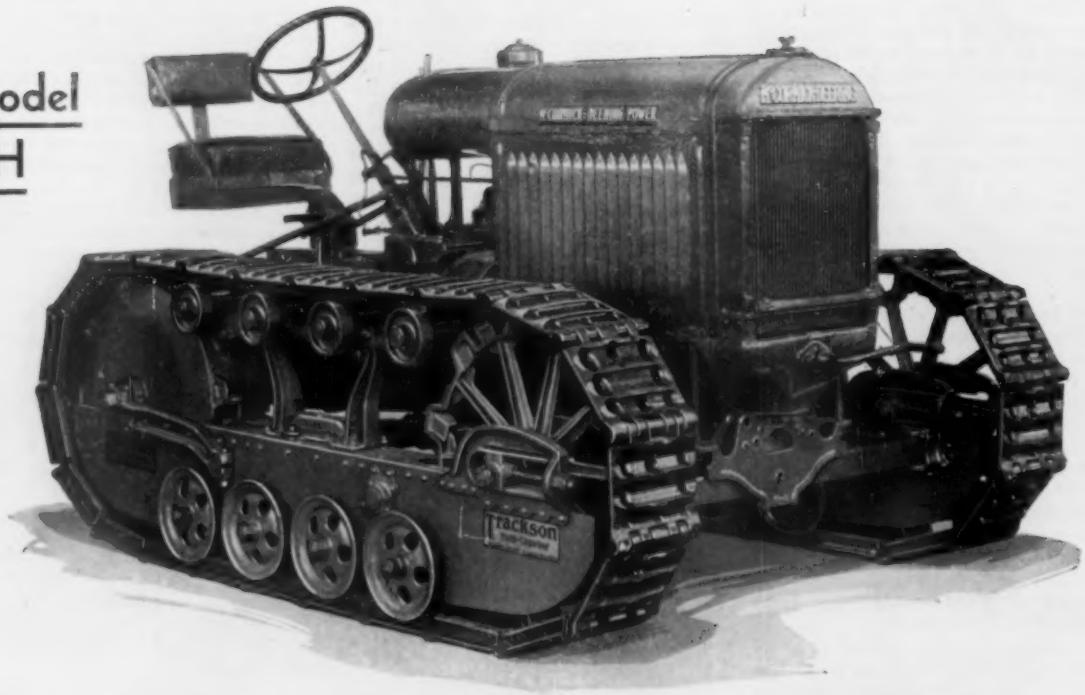

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ZONING and PLANNING NOTES

From Data collected by the Zoning Committee of New York (233 Broadway)

Recent Zoning Ordinances

MARYLAND.—Maryland Washington Metropolitan District in Prince George's County, September 16, 1930.

NEW JERSEY.—Margate City, September 18, 1930.

NEW YORK.—North Castle, February 24, 1930.

Home Rule

CALIFORNIA.—*Brigher v. Board of Public Works of City and County of San Francisco*, 290 Pac. 140.—The State Zoning Law is not applicable to the city of San Francisco.

Interim Zoning

CALIFORNIA.—*Lima v. Woodruff, Building Inspector*, 290 Pac. 480.—This is an appeal from a judgment denying appellant a peremptory writ of mandate to compel the respondent Woodruff, as Building Inspector of the city of San Jose, to issue a permit for the construction of a combined residence and store building. After appellant had taken up orally with Woodruff the issuance of the permit, but before any written application had been made for it, an emergency ordinance was adopted by the city directing the Building Inspector not to issue any building permit not in conformity with a certain preliminary zoning ordinance, the adoption of which had been recommended to the Council by the Planning Commission; under which a permit for the building in question could not be erected on the site chosen for it. The ordinance was subsequently adopted. *Held* that the emergency ordinance, preserving the status quo pending the adoption of the comprehensive ordinance, was valid.

NEW JERSEY.—*Deerfield Realty Co. v. Hague*, 151 Atl. 373.—A municipality cannot refuse to issue a building permit on the ground that it intends to adopt a comprehensive zoning ordinance where two years have elapsed since the passage of a statute authorizing it to zone and it has taken no action to that end.

Private Covenants

CONNECTICUT.—*Whitton v. Clark*. 151 Atl. 305.—Where a plot owner adopts a general plan for development, imposing burdens upon various lots for the general benefit, the restrictions are enforceable between lot owners.

Where uniform restrictions are imposed upon substantially all lots in the plot and the intent is evinced by the grantor not to retain any part, the conclusion is justified that the restrictions were for the mutual benefit of the lots.

Where the grantor of lots in the plot intends to retain a part of the tract and includes restrictions in deeds to some lots but not to a considerable number of others, the inference that the restrictions were intended for the mutual benefit of the lot owners is weakened.

Restrictions contained in some deeds to plot lots but omitted in a majority of them are not enforceable between the lot owners.

Filling Stations

GEORGIA.—*Reynolds v. Brosnan*, 154 S. E. 264.—The constitutionality of an act empowering the city to regulate filling stations must be based upon the constitution prior to the passage of the zoning amendment to it in 1927; where no authority to zone was enacted since the amendment. The act empowering the city of Albany to regulate filling stations is therefore unconstitutional in authorizing the refusal of a permit for them conforming to the building regulations.

Racial Regulations

KENTUCKY.—*Warley v. Board of Park Commissioners*, 26 S. W.—2d, 554.—Under a statute authorizing a board of park commissioners to regulate the use of parks it could not validly assign to the colored people of Louisville certain parks or facilities in parks or parts of parks for their exclusive use and others for the exclusive use of white people.

Racial Zoning

VIRGINIA.—*City of Richmond v. Deans*, 37 Fed. 2d, 713.—A zoning ordinance prohibiting a person from using as a residence any building on any street between intersecting streets where the majority of residences there are occupied by persons with whom that person is forbidden to intermarry, is void as race discrimination.

Airports

KANSAS. — *Concordia - Arrow Flying Service Corporation v. City of Concordia*, 289 Pac. 955.—A statute authorizing the leasing of municipal airports to private corporations for operation is constitutional, and the fact that the title of the Act, "providing for the acquisition, enforcement, equipping, maintenance and regulation" of airports, did not include the word "leasing" does not render it invalid.

NOTE BY EDITOR.—The Kansas Courts have already held, in *City of Wichita v. Clapp*. 125 Kan. 100, 263 Pac. 12, that the establishment of a public airport is a public, municipal purpose; and in *State ex rel v. City of Coffeyville*, that a city cannot lease such a port to a private party for operation without statutory authority to do so.

WASHINGTON. — *State ex rel City of Walla Walla v. Clausen*, 289 Pac. 61.—Municipal corporations of the second class have authority to acquire and maintain airports outside their corporate limits.

Dedication—Special Assessment

NEW JERSEY.—*Demarest v. Mayor and Council of Borough of Bergenfield*, 151 Atl. 211.—The borough's acceptance of dedication for street purposes in consideration of its agreement not to assess the cost of the improvements against the abutting owners is a valid bar to such assessment.

Billboards

NEW JERSEY. — *Federal Advertising Corporation v. Recorder of Borough of Fairborn*, 151 Atl. 285.—An ordinance declaring a billboard erected within ten feet of the street line a public nuisance is not a zoning ordinance, and must be sustained, if at all, as a non-zoning exercise of the police power, and as such is invalid.

Revocation of Permit

NEW JERSEY.—*Pabst v. Ferner, Building Inspector*, 151 Atl. 368.—In the absence of fraud or deceit a building permit, not contrary to ordinance, cannot be revoked after a contract for the removal of an old building on the site has been entered into.

Eminent Domain

NEW YORK.—*Carpenter v. City of Buffalo*, 137 Misc. 618.—Plaintiff is entitled to an injunction directing the removal of certain buildings which cut off the access to her property except for a 20-foot driveway and to damages for the obstruction caused by said buildings, where it appears that the city of Buffalo acquired the buildings from plaintiff and others for street purposes but, not finding them fit for that use, rented them. A municipality cannot use the power of eminent domain as a vehicle to enter the real estate business, for it may acquire and hold property only as it is necessary to the proper exercise of power specifically conferred or essential to those purposes of municipal government for which it was created. Plaintiff properly objected to the use of the buildings as in the nature of a nuisance, and if the damage is a continuous one she is entitled to injunctive relief and will not be left to her remedy by mandamus and may recover damages which she has suffered.

The Commissioners, in awarding consequential damages to this property at the time of taking, assumed that the remaining lands were to front upon a widened municipal street, and probably would have made a larger award if they were estimating the damage to this land 50 feet removed from the street with only a driveway for access thereto.

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Light and Air

NEW YORK.—*Geisler v. Mitchell*, 137 Misc. 462.—Providing zoning regulations do not prohibit, the owner of real property, consisting of a building and vacant land adjoining, having leased or sold the building and lot on which it stood, retaining the adjoining vacant land, may erect thereon a structure which cuts off light, air and ventilation to the building and premises so sold or leased without being liable to his grantee or lessee thereof. In such case there is no implied easement of light, air and ventilation under the grant or lease to which the adjoining lot is servient. Nor is there an implied covenant on the part of such grantor or lessor not to cut off, by his use of the vacant premises retained by him, light, air and ventilation to the premises granted or leased.

Parties—Nuisance

NEW YORK.—*Keenly v. McCarty*, 137 Misc. 524.—An owner of property in a residential district may not invoke the power of a court of equity to enjoin the violation of a zoning ordinance by an adjoining owner. The remedies for such violation are provided in the ordinance itself.

An owner has two remedies at law: (1) to proceed by information in a proper court against the defendant for violating the zoning ordinance; (2) after demand for its enforcement by the proper municipal authorities, and their failure to act, to make application for a peremptory order of mandamus directing the proper authorities to enforce the provisions of the zoning ordinance.

An owner of premises in a residential district is entitled to an injunction restraining an adjoining owner from receiving alcoholic or drug addicts or insane or demented people as patients, and from suffering those who may lawfully be patients to go about the premises or upon the streets in the neighborhood improperly attired, and from keeping patients who are not under control in respect to outcries or screaming.

Parties

NEW YORK.—*Buckley v. Baldwin*, 235 App. Div. 245.—The owner of property may not maintain an equity action against a property owner across the street who, contrary to the zoning ordinance, has constructed an upstairs porch on her house and used it as a dwelling for more than two families, there being, as yet at least, no financial damage.

Esthetics in England

The general and special laws under which cities and regions of England exercise architectural control are summarized in the article appearing on page 124 under title "Keeping British Streets Presentable." This article is based on data gathered by the International Housing Association. A recent article in *The Saturday Evening Post*, entitled "England's War on Ugliness," described progress under these laws, and under related regulations previously featured in this magazine.

THE MONTH IN PUBLIC HEALTH

Conducted by JAMES A. TOBEY, Dr. P.H.

Social Hygiene Surveys

FACTS are necessary prerequisites to intelligent action. During 1930 the American Social Hygiene Association, of which Dr. William F. Snow is Director, made community studies of social hygiene in Washington, D. C., Baltimore, Md., and now has undertaken similar investigations in Indianapolis, New Orleans, and St. Louis. These surveys are made at the invitation of and in cooperation with health, social, and civic agencies. Among the points brought out are the local facilities for educational, legal, protective, and medical measures.

The Pursuit of Health

G. K. CHESTERTON has been quoted as saying that "of all human things the search for health is the most unhealthy." In an address before the British Medical Association, which met at Winnipeg last summer, Dr. Robert Hutchison quoted this axiom with approval and issued a warning against public over-anxiety about the state of its health. According to Dr. Hutchison, whose remarks were reproduced as an article in the *New York Times* for September 14, 1930, worry about health is worse than disease itself.

While all reasonable sanitarians will agree with this writer in condemning hypochondriasis, whether individual or in epidemic form, Dr. Hutchison's views represent the other extreme. His formula is to disregard health entirely and live blissfully in ignorance of all scientific progress regarding hygiene. Such an attitude is obviously nonsensical, for there is a happy medium in which normal individuals may seek to put into operation the accepted principles of healthy living.

When, for example, it is recommended that everybody should eat whatever he likes, with no thought to vitamins or anything else, such a course could easily be carried to foolhardy extremes—and too frequently this has been done. So, too, if the milk and water supplies of a community are dangerously impure, the people have good cause for worry and excitement. The practical application of sanitary engineering and modern public health administration will do much to relieve the citizens of any cause for worry regarding the condition of their health.

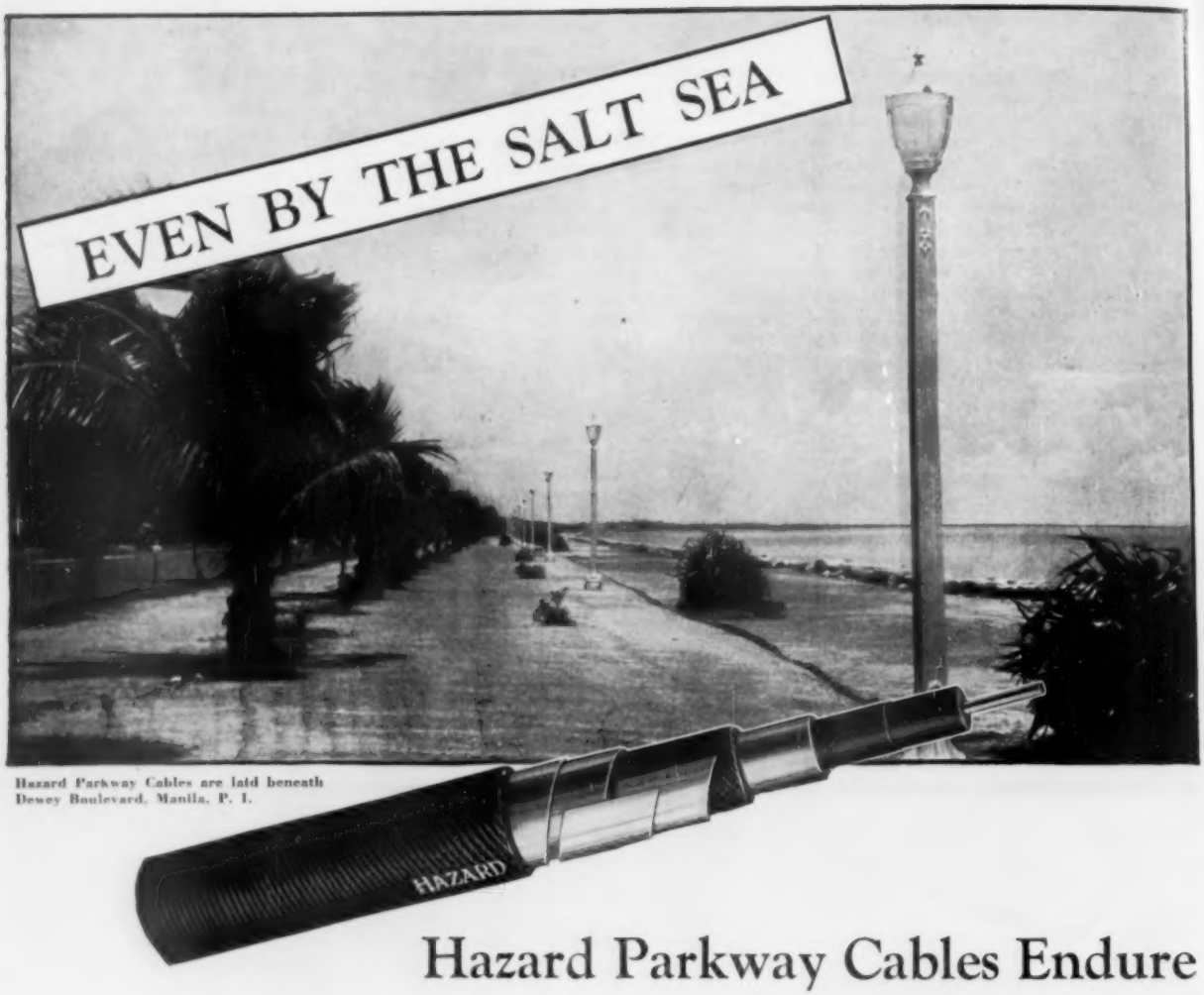
The pursuit of health need not be based on fads or fancies, nor need it be carried to excess, but certainly the modern scientific teachings of sound hygiene cannot be ignored. If we would only utilize what we know, life would be longer, happier, and more generally efficient. Any other attitude is ridiculous, no matter from what source it comes. Sane living is obviously more conducive to progress and to the enjoyment of life than is a blind and complacent policy of *laissez-faire*.

The Campaign Against Cancer

ALTHOUGH the family physician is the key man in the control of cancer, the dentist, the nurse, the health officer, the voluntary health agency, the civic worker, and the general public all have important roles in the warfare against this malady. As is well pointed out in an article on "What New York State Can Do in the Control of Cancer" in *Health News* of that state for September 22, 1930, the dentist does not see many cases of the disease, but he can remedy mouth conditions, such as bad teeth and imperfect dentures, which often lead to mouth cancer. The nurse can bring the public to the medical profession and in turn translate the facts of medical science to the laity. Health agencies can be of service by educating the public regarding those facts which are really known about cancer.

Although cancer remains somewhat of a medical enigma, a few definite facts about it are conceded. One is that there is no specific "cure," but that the ravages of the disease may be restricted by early diagnosis, and prompt treatment, usually by competent surgery. In a discussion of cancer cures in the *Journal* of the American Medical Association for June 7, 1930, the positive assertions are made that cancer has been definitely proved not to be an infectious disease, that there is no vaccine or toxin for it, that there is no known chemical which will cure cancer, and that treatments by X-rays and irradiation have proved disappointing. Real hope lies, however, in prompt surgical attention to the first signs of the disease.

During November the American Society for the Control of Cancer, of which Dr. C. C. Little is President, and its various local branches, are particularly active in bringing this message of hope to the public. In New York City, for example, about a million dollars' worth of advertising and publicity is donated to the campaign by interested and public-spirited agencies.



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ject of all these activities is to induce people to consult their physicians regularly, to teach them the symptoms that may indicate cancer, and to inculcate the idea that in its early stages cancer is curable.

A Proposed Federal Department of Home and Child

REPRESENTATIVE RUTH BRYAN OWEN is planning to introduce at the next session of Congress, which convenes the first Monday in December, a bill to create a new Federal Department of Home and Child. The purpose of this proposed department, with a Secretary in the President's Cabinet, would be to promote and foster education, home and family life, and child welfare. The Department would be authorized to conduct research, experiments, and survey, formulate and foster plans, and compile and disseminate information relating to (a) the infancy and pre-natal care, health and hygiene, education and training, neglect, dependency and delinquency, and the employment and recreation of children, and (b) family housing and home economics.

In order to accomplish these purposes, Mrs. Owen would have transferred to the new Department the existing Office of Education, the Children's Bureau, all functions of the Public Health Service in respect to child health and hygiene and family health and home sanitation, certain functions of the Attorney-General and the Board of Public Welfare of the District of Columbia, certain functions of the Federal Board of Vocational Education and of the Extension Service of the Department of Agriculture, and the Bureau of Home Economics.

"At present," says Representative Owen, "the child has been dismembered and scattered amongst almost a dozen different departments and bureaus in Washington." For years leading sanitarians have sought to bring about a more effective coordination of Federal health activities, with partial accomplishment of this aim in the adoption of the so-called Parker Bill at the last session of Congress. What Mrs. Owen proposes would result in a further dispersion of Federal health work. Public health is a unit and should have administrative treatment as such in our national government. Any breaking-up of the functions of our Public Health Service and their transfer to another department would be a serious mistake. The endeavor to treat the child as a unit may be laudable, but it should not be accomplished at the expense of the correlation of our national health activities.

Trenton's Annual Report on Its Health

A 68-PAGE multigraphed document has been issued by the Bureau of Health of Trenton, N. J., of which Dr. A. S. Fell is executive, as a report on the 1929 health activities of "New Jersey's Historic Capital City." This report, the first ever to be issued in published form by this city, is an able attempt to interpret the mass of technical data on the health of the municipality, which has accumulated during the year. It contains numerous interesting charts and diagrams, which are explained in the text. The idea is a good one and well worth adoption in many cities where the health department appropriation is insufficient to provide for a more formal printed report.

Health in Its Own Building

MARBLE office buildings are by no means the only factors in successful health administration, but they do help the cause materially. In East Orange, N. J., the local Health Department has recently moved into its splendid new building in the civic center of this city of 70,000 population. A picture of this magnificent Health Department office—which is none too much so in view of the importance of municipal health work—adorns New Jersey's *Public Health News* for August-September, 1930, in which the arrangements of the building are described in detail.

"Recognition of the Health Department as a vital factor in city government," says this article, "is exhibited by its transfer, in one city after another, from an obscure, upstairs corner to prominent quarters near the entrance of the City Hall." New Jersey cities now having proper quarters for their Health Departments are said to include Trenton, Camden, Elizabeth, Bloomfield, Englewood, Newark, Paterson, Asbury Park, and Hackensack.

A useful reprint from THE AMERICAN CITY on adequate health department quarters, with suggested plans, may be obtained without charge from the Committee on Administrative Practice of the American Public Health Association, 370 Seventh Avenue, New York.

Photographic Inspection of Milk Plants

THE Chicago Health Department has recently inaugurated a unique method of inspecting and recording conditions at milk plants. Since May, 1929, hundreds of photographs have been made of sanitary conditions at milk plants, according to *Chicago's Health* for September 9, 1930, which states that such an action usually has a beneficial psychological effect on the operators of these plants.

"How effectively Chicago has guarded her milk supply," says this bulletin, "is demonstrated by the fact that Chicago has not suffered an outbreak of milk-borne disease for the past fourteen years." Milk is of course man's most important food, and it is the duty of all health authorities to exercise continuous vigilance to ensure cleanliness and safety in the production and distribution of this "most nearly perfect food."

Seven years ago the state of Mississippi requested the United States Public Health Service to aid in the development of a milk sanitation program. Only six cities in the state then had proper protection of their milk supplies, whereas today, after two years' operation of a standard milk ordinance, 26 cities are so served. This improvement in the milk supply has resulted in an increase of consumption of all milk of 23 per cent, while the consumption of pasteurized milk alone has risen 117 per cent. In a recent news release the Public Health Service declares that the whole state of Mississippi may expect an excellent milk supply within a very few years.

Birth Rates and Infant Mortality Rates: 1929

THE infant mortality rate in the United States during 1929 was the second lowest since the establishment of the birth registration area in 1915, according to a table just issued by the Department of Commerce, Bureau of the Census, Division of Vital Statistics, and showing by states both birth rates and infant mortality rates, 1915-1929.

For the sixth consecutive year, Oregon leads the states, with the lowest infant mortality rate (48). In 1929, 11 states had lower rates than at any time since their admission to the registration area.

The birth rate for the year 1929 was 18.9, the lowest for any year since the establishment of the birth registration area. Oregon had the lowest rate (14.1) of any state in the registration area. Significant of "the declining birth rate" are the rates of 25 states which are lower than the rate for the birth registration area of continental United States. The highest birth rate, 26.9, is recorded for New Mexico.

SANITARY ENGINEERING LEGISLATION IN POLAND

POLAND had not sufficiently recovered from the World War to turn her attention to sanitary engineering legislation, the basis of effective modern sanitary engineering, until 1928, Zygmunt Rudolf, Chief Sanitary Engineer of the Polish Public Health Service, explained in a paper on "The Development of Sanitary Engineering in Poland," presented at the First International Congress for Municipal Health and Sanitary Service in Prague last spring.

In 1928 a building code was adopted, and statutes were issued regulating water-supply and sewage disposal, superseding previous German, Russian and Austrian laws in annexed regions. These statutes make the community responsible for its water-supply and sewage disposal. Water-supply projects must be confirmed by the government before being built. Communities with a population of over 25,000 must be provided with a sewerage system and a sewage disposal plant. Special attention is being given to the improvement of sanitary conditions in villages, and a model village has been established as an experiment station. A state fund has been proposed to facilitate the building of water-supply and sewerage systems, by which money will be given, not for an entire project, but for the purpose of assisting local communities.

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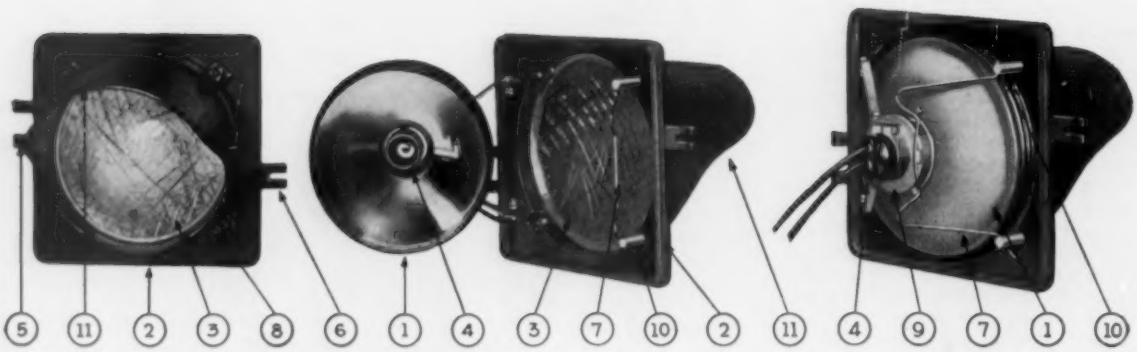

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MUNICIPAL AND CIVIC PUBLICATIONS

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Accounting for Depreciation of School Buildings

By George Stephen Murray. Published privately, 23 Judson Avenue, New Haven, Conn. $1.00.

This is the first comprehensive analysis of accounting for depreciation of school buildings which has been made available. The author has reviewed thoroughly the accounting depreciation practices in commerce and municipal government, and has set up basic reasons for including depreciation in public school accounting. The use of the Murray technique for computation of depreciation and allowance, as outlined in this pamphlet, should enable any school department to set up its own depreciation account. The study should be put into print for more permanent use.
N. L. ENGELHARDT.

Population Problems

By Warren S. Thompson. Mc-Graw-Hill Book Co., New York. 462 pp. $3.75.

This excellent volume, though a textbook in sociology, is so chock-full of interesting material and so well written that it merits a more general circulation. The author begins with three excellent chapters on the theories of population. The next six present the principles of population growth, carefully illustrated and demonstrated with tables and charts. The remaining space is devoted to special problems such as natural selection, immigration and the control of population. Of special interest here are four chapters on the city, which discuss the factors contributing to its growth, its economic, social and cultural advantages and disadvantages, and the future of the large city. The author confidently predicts a slowing-up of urban growth, both because our rate of natural increase is tending to flatten and because much of the present crowding of business and industry is "neither good economics nor good social policy."

Crime Prevention as a Municipal Function

By Hubert R. Gallagher. Syracuse University, Syracuse, N. Y. 66 pp. $1.00.

This interesting pamphlet was prepared under the joint auspices of the N. Y. State Bureau of Municipal Information and the Syracuse School of Citizenship and Public Affairs. The importance of the first offense and the prominent place of juveniles as first offenders emphasizes the need for more attention to preventive police work. The author has analyzed the problem from the standpoint both of police administration and of social case work. These suggest certain procedure and technique in this work. There is a good brief summary of the practice, still in its infancy in American cities, and a well-selected bibliography.

Cross Sections of Rural Health Progress: Report of the Commonwealth Fund Health Demonstration in Rutherford County, Tenn., 1924-1928

By H. S. Mustard, M. D. The Commonwealth Fund, Division of Publications, New York. 1930. 230 pp. $1.00.

The work of a child health demonstration in a county almost entirely rural in character, the largest city being the county-seat with a population of about 8,000, is described and discussed. With practically no county or city health organization to start with, the demonstration was forced to build up the community's interest in the work and to establish agencies and methods of operation, not only for its own activities, but also to provide for the continuance of public health effort.

With school health work as a basis, community interest in sanitation, preventive medicine, infant and maternity welfare, and communicable disease control was gradually stimulated. The methods are reported in detail, with charts and tables included in the text, and more extensive tables given in an appendix.

The book is interestingly written and well printed. Its value to county officials and social workers should be great, not only in indicating what can be done in scattered communities, but also how to do it. JAMES A. TOBEY.

Land Values in New York in Relation to Transit Facilities

By Edwin H. Spengler. Columbia University Press, New York. 179 pp. $3.00.

The effect of subways on adjacent land values has been a moot point since the first subways in New York were commenced thirty years ago. The city now has 150 miles of subways in operation with a new 57-mile system ready to open next year, and plans for 12 miles more. There has been a general impression that subways generously stimulate real estate value. The present study, after a careful analysis of values in New York City concludes that the influence of subway construction upon them is far more variable than had been hitherto suspected; so much so that the author doubts the feasibility of financing new subway construction by special assessment except, perhaps, in undeveloped territory. He suggests instead an increment tax.

A Civic History of Kansas City, Missouri

By Roy Ellis. Published by the author, who is President of the Southwest Missouri Teachers College, Springfield, Mo. 343 pp. $175. Postpaid.

Here is an attempt to achieve something more in the way of local history than the conventional volume attains. The opening chapters sketch the city's history, with special emphasis on the city's economic, social and civic development. The remainder is devoted to such topics as the city plan, public utilities, police and fire service, public health welfare and education and the city's finances. It ends by being a civic textbook with an historical bent. Despite an annoying quantity of irrelevant and well-known material about other cities, there is much here that is new and interestingly presented.

The Negro Peasant Turns Cityward

By Louise V. Kennedy. Columbia University Press, New York. 270 pp. $4.25.

The northward drift of the Negro during and since the World War has been one of the most significant movements in contemporary American history. Like our immigration generally, it represents a compound transition, from one region to another, from country to city, from agriculture to industry. The author traces the course of the migration, the Negro's occupational and economic status in his new-found home, including his housing, and concludes with a suggestive section on social contact and maladjustment. There is a useful analytical digest on pages 60 to 67 on the reports and surveys published on the status of the Negro in various cities of the North.

Road Vehicles—Great Britain

A report of the Ministry of Transport on revenue received from the licensing of road vehicles for 12 months ending November 30, 1929, and on the total number of licenses in Great Britain current on that date; also a detailed statement of the number of mechanically propelled vehicles licensed in the various counties and county boroughs during November. 31 pp. 80c postpaid. (Apply to The British Library, 551 Fifth Ave., New York.)

Ground Water Supplies in the Vicinity of Asbury Park

This is bulletin No. 35 of the Reports of the New Jersey Department of Conservation and Development. It is by David G. Thompson, of the United States Geological Survey, which cooperated with the state department in making the study reported in the bulletin. 50 pp. 1930. (Apply to the Department, State House Annex, Trenton, N. J.)

The School Building Survey and a Building Program for the School City of Richmond, Ind.

By William G. Bate, Superintendent of Schools and his educational staff. George D. Strayer and N. L. Engelhardt, Educational Advisers. 1930. 86 pp. Board of Education, Richmond, Ind.

This study points out the possibility of the "pay-as-you-go" building program for this city. The survey is a splendid illustration of the kind of report which can be prepared by the staff of a city school system when proper attention is paid to the standards and techniques which have been developed in this field. It contains excellent charts and maps and presents convincingly the program which Richmond should undertake within the next fifteen years.

Juvenile Division of the Municipal Court of Philadelphia

Published by The Thomas Skelton Harrison Foundation, Philadelphia. 163 pp. Apply to the Foundation.

This volume is the fifth one of a series of studies made by the Philadelphia Bureau of Research for the Harrison Foundation. This report is largely the work of Joel D. Hunter, of the United Charities of Chicago, and formerly Chief Probation Officer of the Juvenile Court of Cook County. The report presents a painstaking study of the work of the Philadelphia Juvenile Court and the probation department attached to it. It is frankly critical of the political influence which handicaps the Court and of its lack of cooperation with public and private social agencies. The comments of the Judge of the Court on these and other criticisms are included with the report.

New York City's Parks, Playgrounds and Parkways and Their Proposed Extension

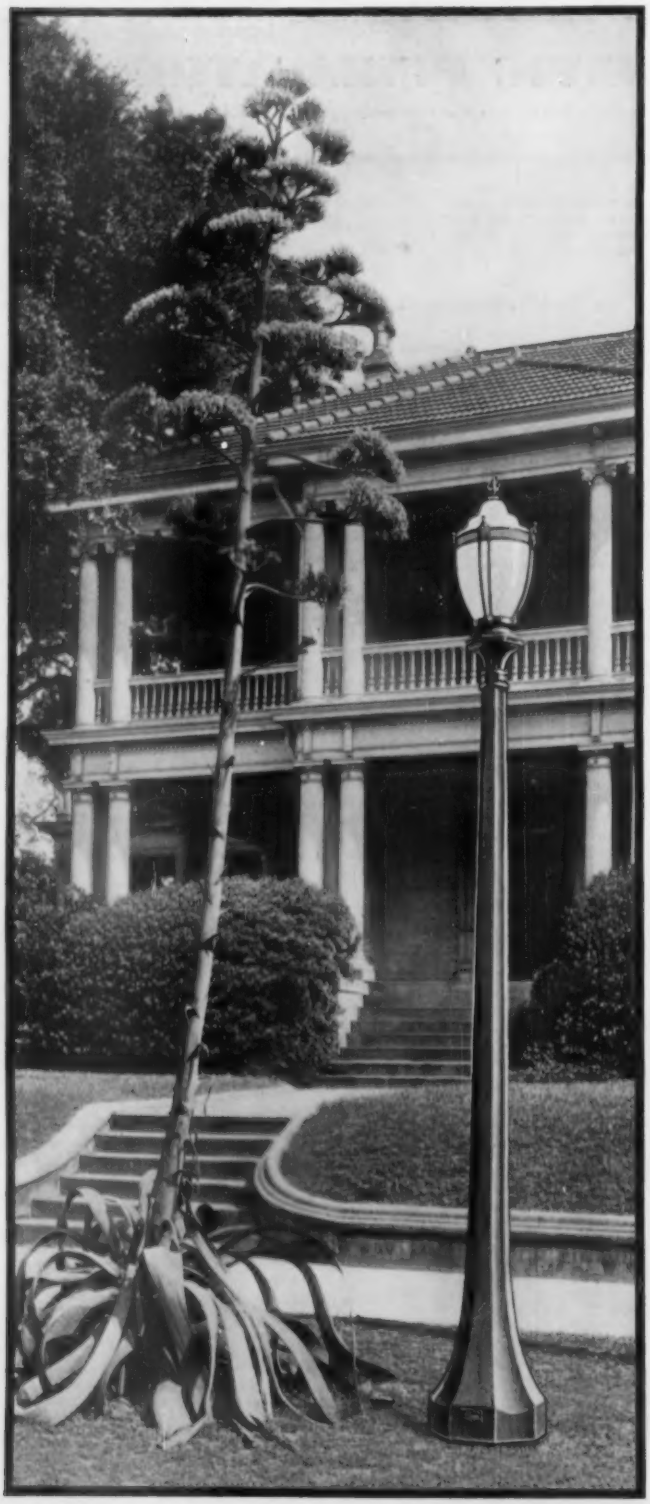
"Based on a study by a special committee of the existing system of recreational spaces, plans for increasing their number and variety and recommendations designed to carry the plans into effect," this report to Mayor Walker, submitted by Comptroller Berry, is a survey of the park and playground situation. 45 quarto pp., illustrated; with separate maps of the five boroughs, on which present and proposed open spaces are indicated. (Apply to the Comptroller, City Hall, New York.)

Control of Public Utilities Abroad

As a part of the research program under the auspices of the Commission appointed to investigate the Public Service Commissions Law in New York State, Professor Orren C. Hormell, of Bowdoin College, who had previously investigated utility management and control in several European countries, prepared the material making up this 88-page booklet, dealing with public-utility control in Great Britain, France, Germany, Sweden, Norway and Switzerland. It had appeared as an appendix to the final report of the Commission, and is now made available as a separate reprint. 1930. $1.00. (Apply to the School of Citizenship, Syracuse University, Syracuse, N. Y.)

The Administration of Damage Claims in New York State Municipalities

A report by Robert Myron Paige of a survey conducted by him, under the direction of the School of Citizenship at Syracuse University, and the New York State Conference of Mayors. It takes up the requirements of a valid damage claim, the investigation and settlement of these, and other aspects of their administration. Various types of actionable defects are considered, including liability for streets and sidewalks, and maintenance of parks and playgrounds. 56 pp. (Apply to the School of Citizenship, Syracuse University, N. Y.)



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The Leisure of a People

Eugene T. Lies, of the National Recreation Association, has acted as director of the elaborate recreation survey of Indianapolis, Ind., made under auspices of the Council of Social Agencies, financed by the Indianapolis Foundation, and just published under the above title. It is presented in six major parts: A social history of the city; a picture of the city's leisure; "Play and Recreation"; "Agencies Related to the Leisure-Time Needs of the People"; a group of "Special Chapters"; and an appendix containing questionnaire forms used in the survey, suggested legislation, etc. 570 pp., $1.50. (Apply to the Council, Indianapolis, Ind.)

The State Health Departments of Massachusetts, Michigan and Ohio

By James Wallace, M. D. The Commonwealth Fund, New York. 1930. 192 pp. $1.50.

This review of the public health activities in three states where the organization and administration of such work is particularly well advanced is the result of surveys made by the author following an appropriation for the purpose in 1928 from the Commonwealth Fund. An interesting and valuable feature of the book is the arrangement whereby each health activity of all three states is discussed in a single section. In other words, each state is not considered separately, but each activity is so discussed that immediate comparisons may be made. This well-printed book should be valuable to public health administrators, particularly state officials.

JAMES A. TOBEY.

The New Automatic Residual Chlorine Recorder and Controller

A reprint from the *Journal* of the American Water Works Association, of a paper by J. Westford Cutler, Research Engineer, Wallace & Tiernan Co., and Frank W. Green, Superintendent of Filtration, Passaic Consolidated Water Co., Little Falls, N. J., prepared for the 1930 convention of the Association. It describes experience with a new automatic device to record and control residual chlorine in water purification processes. Illustrated. 14 pp. (Apply to Wallace & Tiernan Co., Inc., Newark, N. J.)

1930 Proceedings, National Paving Brick Manufacturers Association

The twenty-fourth annual meeting of this Association, held in Chicago in December, 1929, is reported in this 97-page illustrated booklet, which includes addresses on highway construction operations, resurfacing old pavements with vitrified brick, salvaging and relaying in pavements, brick pavement construction, regional highway planning, and a symposium on fillers for brick pavements. (Apply to the Association, National Press Bldg., Washington, D. C.)

Standards of the Diesel Engine Manufacturers' Association

A little booklet of 57 pages, containing standard practices for rating, fuel guarantees, lubricant consumption, and equipment for diesel engines, and notes on the selection and installation of stationary diesel engines, as well as a set of standard definitions for terms involved in diesel engine practice. 1930. (Apply to the Association, 30 Church St., New York.)

Subdivision Regulation in Unincorporated Areas

By Jacob L. Crane, Jr., town planner, Chicago. "The great advantage of the guidance of land platting before it is used," states Mr. Crane in this Bulletin of the National Conference on City Planning (September, 1930), "lies in the fact that results approximating sound planning can be achieved at virtually no cost, since this method avoids the tremendous burden of subsequently rebuilding badly planned built-up districts. . . . Probably a grand total of four or five hundred towns and cities in the country are now utilizing some form of subdivision regulation in unincorporated areas." Recommendations are given as to what needs to be done. 25c a copy; $10 a hundred. 15 pp. (Apply to the National Conference on City Planning, 130 E. 22d St., New York.)

A School Building Program for the City of Utica, N. Y.

Made by George D. Strayer and N. L. Englehardt, Teachers College, Columbia University, 1930. 63 pp. +. Board of Education, Utica, N.Y.

This study presents a precise statement of existing school building conditions in the city of Utica and suggests the program for school building development which should take place in this city during the period 1930 to 1945. The third chapter of the study is concerned with financing the building program. It is clearly shown that Utica is quite able to advance the program of expending $2,500,000 which has been advised in this study.

Model Ordinance Regulating the Removal of Buildings

A committee of the New York State Conference of Mayors and Other Municipal Officials has prepared this ordinance dealing with the moving of buildings through or across public streets and places, as a recommended model. It is based largely on data gathered by the New York State Bureau of Municipal Information, of Albany, September 4, 1930. 5 pp., mimeographed. (Apply to THE AMERICAN CITY, 470 Fourth Ave., New York.)

Report of the Union County Park Commission, N. J.: 1929-1930

The fourth formal report of the Union County Park Commission, an attractively illustrated booklet of 61 pages, covers the period from July 1, 1928 to July 1, 1930, and records the progress and activities of the Commission during the past two years. (Apply to the Commission, Elizabeth, N. J.)

Der Ruhrverband

A 65-page booklet in German by Dr.-Ing. K. Imhoff, describing the Ruhr district in Germany and outlining the history and functions of the Ruhrverband, the association concerned with providing the district with a pure and ample water-supply. This is followed by descriptions of the technical accomplishments of the association. There are many illustrations and a large map. 1930. (Apply to Carl Heymanns Verlag, Berlin W8, Germany.)

There are also available several reprints and other pamphlets, regarding various aspects of the work of the Ruhrverband, as follows: "Zweistufige Tauchkörper für phenolhaltiges städtisches Abwasser in Hattingen," by Oberingenieur Franz Fries; "Abwassergenossenschaften," and "Beobachtungen über Schwimmschlamm in den Emscherbrunnen des Ruhrverbandes," by Dr.-Ing. K. Imhoff; "Die zulässige Belastung eines Gewässers durch Abwasser," and "Der Fluss als Kläranlage," by Dr.-Ing. Mahr; "Die Kläranlage Iserlohn i. W., die erste Schlammbelebungsanlage mit Schlammgasantrieb," by Oberingenieur Walter Schmidt, and "Das Schlammbelebungsverfahren," by Dr. F. Sierp, all of the Ruhrverband, Essen Germany. (Apply to the authors.)

Essai D'Hydrogéologie

A study of subterranean waters, by Dr. Edward Imbeaux, Chief Engineer of Bridges and Roads, and a member of the Superior Council of Public Hygiene of France. It presents very complete information on the determination of the presence of underground water, together with its quality, chemical composition, and other properties. It goes into considerable detail as to the hydrogeological aspects of many parts of Europe and North America. 104 pp. 1930. 283 francs bound, 270 francs paper covered. (Apply to Dunod, 92 Rue Bonaparte, Paris (VI), France.)

Landscape Architecture: Twenty-Year Compiled Index

Mrs. Helen E. Terkelsen has compiled according to subjects and authors an index to all the volumes of the quarterly which is the official publication of the profession of landscape architecture, from October, 1910, to July, 1930. This is preceded by an appreciation of the magazine by John Nolen, entitled "Some Random Impressions," reprinted from its Twentieth Anniversary Number. 55 pp. $1.00. (Apply to the Landscape Architecture Publishing Co., 9 Park St., Boston, Mass.)

Financial Statistics of Cities Having a Population of Over 30,000: 1928

This summary of 250 cities gives figures with regard to assessed valuation of property, levies of general property taxes, total revenues, governmental-cost payments, and net debt. 23 pp. (Apply to the Bureau of the Census, U. S. Department of Commerce, Washington, D. C.)

The Qualifications and Selection of a City Manager

A report prepared by a committee of eight, of which Prof. A. R. Hatton, of Northwestern University, was chairman, is published to assist city councils in the selection of a city manager. 12 pp. 50c. (Apply to the International City Managers' Association, 923 E. 60th St., Chicago, Ill.)

Sixth Study of Motor Vehicle Accidents in the State of Connecticut

Including those for the year 1929. By Richard Shelton Kirby, Associate Professor, Department of Civil Engineering, Yale University, with an introduction by Robbins B. Stoeckel, Commissioner of Motor Vehicles, Connecticut. This study, one of a series published for the Hartley Corporation, founded by Mrs. Helen Hartley Jenkins, "aims to present a graphic view of the motor vehicle accident situation in the state of Connecticut as it appears at the close of the year 1929; comparing it, not only with 1928, but with the years preceding." 43 pp. (For single copies apply to the Commissioner of Motor Vehicles, Hartford, Conn.; for copies in quantity apply to Yale University Press, New Haven, Conn.)

The Execution of the Master Plan; Taking Advantage of the New Planning Law (N. J.)

The first of these addresses by Campbell Scott, President of the Technical Advisory Corporation of New York, was delivered at a meeting of the Westchester County Planning Federation, and suggests ways and means by which the projects embraced in a master plan may be put into actual execution, particularly with reference to Westchester County plans. The other address, given at the sixteenth annual convention of the New Jersey State League of Municipalities, includes a discussion of the new planning law in New Jersey, and outlines the steps to be taken by any municipality in the state which desires to start planning. 22 and 17 typewritten pp. (Apply to the Technical Advisory Corp., 15 Park Row, New York.)

"Traffic"

A 54-page reprint from the 1930 Proceedings of the American Road Builders' Association, Bulletin No. 12, is divided into sections on "Causes of Accidents—Parking in Business Districts," "Traffic Signals and Signs—Street Lighting," "Weights and Loads—Traffic Zoning," and "Traffic Law Enforcement—Drivers' Permits." (Apply to the Association, Suite 938, National Press Bldg., Washington, D. C.)

24th Annual Report, Wayne County, Mich., Board of County Road Commissioners: 1930

This is a well-illustrated and readable report of 223 pages, covering the period from September 1, 1929, to August 31, 1930. (Apply to the Board, 3800 Barium Tower, Cadillac Square, Detroit, Mich.)

Standard Specifications for Vitrified Brick Pavements

These are the standards adopted by the American Society for Municipal Improvements, and are presented in this booklet of 26 pages, by the National Paving Brick Manufacturers Association. The booklet also contains the standard specifications for paving brick of the American Society for Testing Materials. Illustrated. (Apply to the Association, National Press Bldg., Washington, D. C.)

Report of the Rhode Island Board of Purification of Waters

A two-year report (1928-1929), covering the topics of municipal sewage disposal in Rhode Island, residential sewage discharges, manufacturing wastes, etc. 23 pp. 1930. (Apply to the Board, Providence, R. I.)

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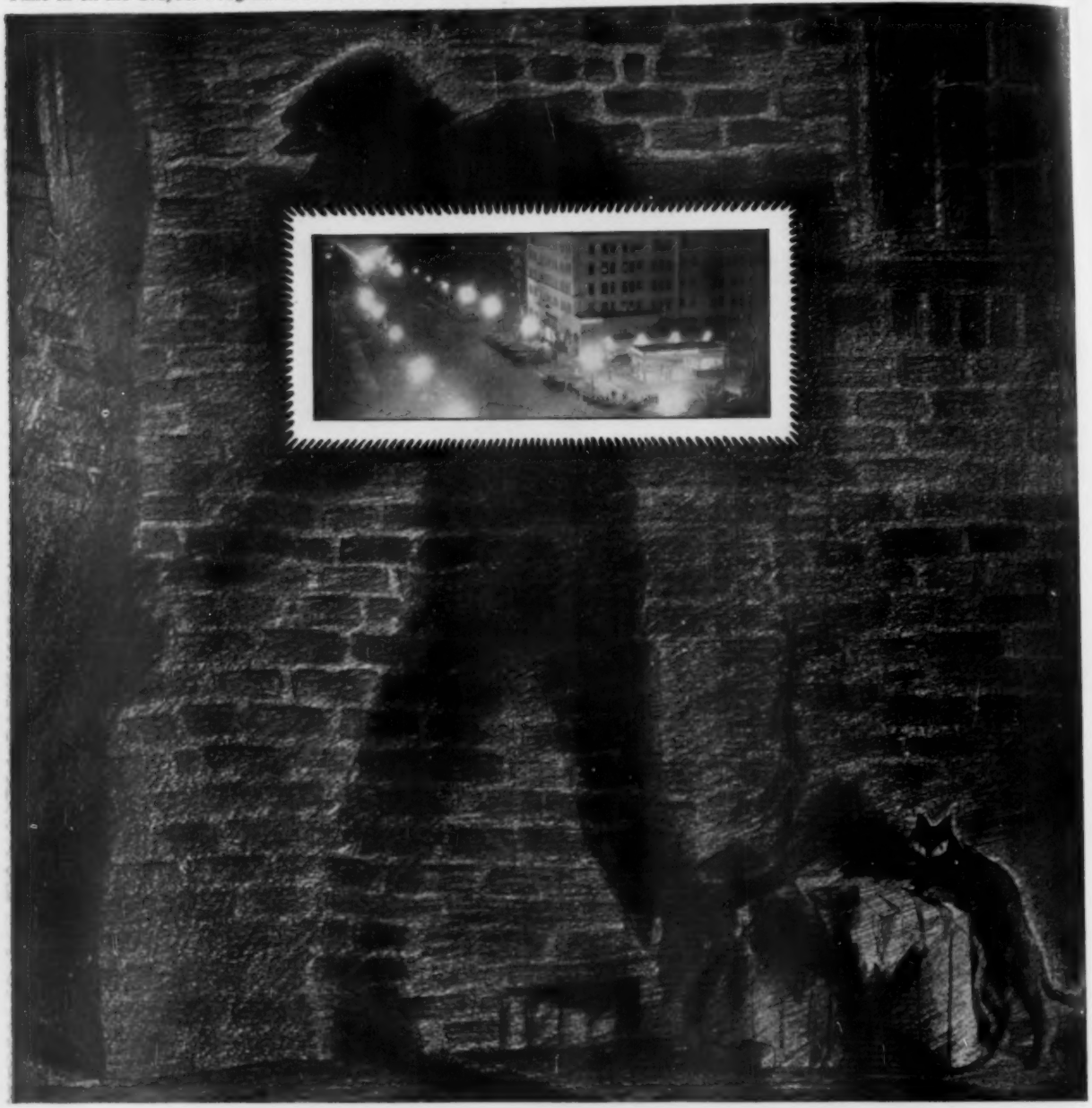

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Federal Relations to Education

A Memorandum of Progress by the National Advisory Committee on Education. Because of "the considerable difference of opinion as to policies which should be pursued by the Federal Government with respect to education, "President Hoover appointed a committee of 52 in the spring of 1929 "to investigate and present recommendations." After a careful study of "the many experiments, policies and trends that have resulted in the present relationship between the Government and the people with regard to education," the Steering Committee has prepared a summary of its findings, a statement of the fundamental principles reached, and several tentative proposals for Federal action.

Among the principles reached by the Steering Committee are the following: "The Federal Government should render large intellectual assistance to the states in matters of education through research, collection and dissemination of reliable information, particularly with reference to those types of intellectual service which the states and the local communities cannot render to themselves. . . . The Federal Government should give some financial aid to education in the states, but in a manner that will not violate other fundamental, political, social and economic considerations basic to sound public policy. . . . Financial grants to states in aid of education as a whole should supplant special grants for the stimulation of particular types of training of benefit to special groups of the population." 53 pp. (Apply to the Committee, 25 Jackson Pl., Washington, D. C.)

The Use of Copper Sulphate in Control of Microscopic Organisms

An article by Frank E. Hale, Ph.D., Director of Laboratories, Department of Water Supply, New York City, constituting the revision of an article on the same theme by Dr. Hale in 1925, and incorporating a number of findings resulting from experiments and study conducted by him in the New York water laboratories. 31 pp. (Apply to the Nichols Copper Co., 40 Wall St., New York.)

The Surface Waters of Michigan

This dissertation by Robert L. McNamee, who prepared it in qualifying for the degree of Civil Engineer, constitutes Engineering Research Bulletin No. 16 of the University of Michigan. As indicated by the subtitle, it is concerned with the hydrology and qualitative characteristics, and purification for public use, of the surface waters of the state, and represents the result of close observation over a period of more than ten years. With its many inland streams and lakes, in addition to the Great Lakes bordering on it, the state offers an unusual outdoor laboratory for the study of surface waters. The purification aspect of the study includes a tabulation of descriptive data and functional characteristics of 27 gravity rapid-sand-filtration plants. 321 pp. and various maps and tables. June, 1930. $1.50. (Apply to the Director, Dept. of Engineering Research, University of Michigan, Ann Arbor, Mich.)

Children of the Covered Wagon

By Estella Ford Warner, M.D., and Geddes Smith. Commonwealth Fund, Division of Publications, New York. 123 pp. $1.00.

This well-written and attractively printed book tells the story of the Child Health Demonstration in Marion County, Ore., sponsored by the Commonwealth Fund from 1925 to 1929. While addressed, according to the Foreword, particularly to readers in the Northwest who may be interested in the most complete public health service which has yet been provided in rural Oregon, the book should prove of value to all who are concerned with child health activities and administration.

JAMES A. TOBEY.

Community Planning

The first number of the official organ of the Town-planning Institute of New Zealand contains articles on Land Resources, Regional Planning and the Provision of Hospitals, Town-planning Education, Airports, Planning and the Motor Vehicle, Planning and the Surveyor, Playground Efficiency, and Publicity. 40 pp. 2s. 6d. (Apply to the Institute, Wellington, New Zealand.)

Forces Affecting Municipally Owned Electric Plants in Wisconsin

The second Research Monograph of the Studies in Public Utility Economics conducted by the Institute for Research in Land Economics and Public Utilities, following Mr. Dorau's statistical study relating to municipal ownership in the electric light and power industry of the entire country, is by Dr. E. Orth Malott, and represents a study of the municipally owned electric utilities in one state in greater detail and covering more phases than was practicable for a nation-wide study. Wisconsin was considered particularly appropriate because of its long-established regulatory system, which covers municipal as well as private plants, and, furthermore, because it has long had a fair-sized number of municipal establishments, reaching a peak of 105 in 1919. The records of the Railroad Commission of Wisconsin were the chief sources of information. The study takes up the development of legal sanctions and powers of municipal electric utilities, the establishment of commission regulation and experience thereunder, the numerical changes as to electric plants in the state for various sized cities and types of plants, the operating experience of the plants, the investment and equity accounts, together with some brief conclusions regarding the study, summarized by the statement that "the financial handicap, and the technological handicap, which are created by legal restrictions, and the managerial handicap, which in turn is created by the public itself, are the main factors influencing the municipal ownership movement in Wisconsin." 101 pp. $1.50. (Apply to the Institute, 337 E. Chicago Ave., Chicago, Ill.)

The Romance of Park Avenue (New York)

By F. A. Collins, published by Park Avenue Association, Inc., 342 Madison Avenue, New York, 1930. 107 pp. Illustrated. $2.50.

This fascinating volume describes the history, since the days of the early Dutch settlers, of the original Fourth Avenue, now known in its southern extremity as Fourth Avenue and at its northern extremity as Park Avenue. The traffic problems of early days are discussed and the many engineering feats which have been employed to create this famous residential street are treated in a very interesting manner.

Standardization of Weighing Devices for Concrete Aggregate

A report of a subcommittee of the General Committee on Equipment, of the American Road Builders' Association, reprinted from the *Proceedings* of the Association for 1930, and constituting bulletin No. 7 of the Association. The report includes definitions, equipment requirements, and suggestions on the arrangement of the weighing devices. 5 pp. (Apply to the Association, 938 National Press Bldg., Washington, D. C.)

Community Industrial Financing Plans

This revised compilation, based on the factual report prepared by the Commercial Organization of the Chamber of Commerce of the United States in 1927, has been made by the Department of Manufacture of the Chamber. It describes plans developed in a number of cities, "usually for the dual purpose of aiding industrial enterprise when desired and also affording reasonable protection to local investors." 61 pp. mimeographed. (Apply to the Department of Manufacture, Chamber of the United States, Washington, D. C.)

Report of The Transportation Survey of St. Louis

The Transportation Survey Commission of St. Louis, Mo., created two years ago and consisting of seven citizen members and nine ex-officio members, has rendered this 226-page printed report, which was submitted to the Board of Aldermen under date of July 25, 1930. In the effort to remedy congestion and confusion in the passenger transportation situation the Commission has given consideration to the street railways, recommending changes in routing, fewer stopping-places, modern equipment, extensions, and more feeder bus lines; to motor-busses, recommending coordination of bus and street-railway services; "service cars" (licensed "jitneys"), recommending that no more be licensed except on proof of public necessity; taxicabs, recommending licensing and regulation; traffic regulation, recommending more signals and safety zones, and the prohibition of left turns and, ultimately, of parking, in the business district; street improvements, urging the importance of proper planning and calling attention to contemplated major projects; rapid transit, recommending five lines of subways for street cars within the central area, and the use of special assessments in financing them; and to financial and legal aspects, with the recommendation that a 50-year terminable permit be granted to a private company for unified operation, under such local control as the present charter makes possible. Two alternative plans were offered: a terminable permit under complete home rule, to be sought from the State Legislature; and a contract providing for municipal acquisition out of earnings. Two members dissented from the granting of a terminable permit. The bulk of the volume is made up of appendices, including various reports of the engineers employed, Kelker, DeLeuw & Co. There are many inserted maps and diagrams. $5.00. (Apply to A. C. Meyers, Secretary, Room 206, City Hall, St. Louis, Mo.)

The Problems and the Opportunity of Community Chest Organizations in 1930

Because expenditures for extraordinary relief by community chest agencies are averaging from 20 to 30 per cent more this year than last, and because money is needed this fall not only for relief, but also for constructive case work and for the normal social needs, a heavy obligation confronts those who are gainfully employed and especially those who are well-to-do—an obligation which constitutes a test of their social vision and their peace-time patriotism, stated J. Herbert Case, Chairman of the Board of the New York Federal Reserve Bank and President of the Association of Community Chests and Councils, in an address delivered in September in Scranton, Pa., which has been published in pamphlet form. Statistics showing chest records in various cities during the past year are included. 12 pp. (Apply to THE AMERICAN CITY, 470 Fourth Ave., New York.)

Planning to Make Hometown Livable

The 6-page article of this title by Professor Karl B. Lohmann, of the Department of Landscape Architecture, University of Illinois, in the October issue of THE AMERICAN CITY, is available in the form of an attractive 8-page reprint, with several additional illustrations (18 halftone reproductions in all). The chief requisites to the realization of a convenient and beautiful community, realizable through planning or replanning, are discussed and concrete examples offered. (Apply to THE AMERICAN CITY. 10c per copy; $5 per 100; special rates on larger quantities.)

The Kentucky City

The Kentucky Municipal League, which last spring started to publish a weekly four-page bulletin entitled *The Kentucky City*, to present to officials of member cities and other interested persons a digest of city affairs, has recently expanded the publication to eight pages, including advertising. Recent numbers have been devoted to the annual convention of the League, "The Street Cleaning Problem," and "Public Safety and Private Water Systems."

Other Reports Received

CHICAGO, ILL.—Annual Report, Municipal Court of Chicago, for the year ending December 1, 1929. 116 pp.

HARRISBURG, PA.—A Stewardship Report of Harrisburg Chamber of Commerce. 8 folder pp.

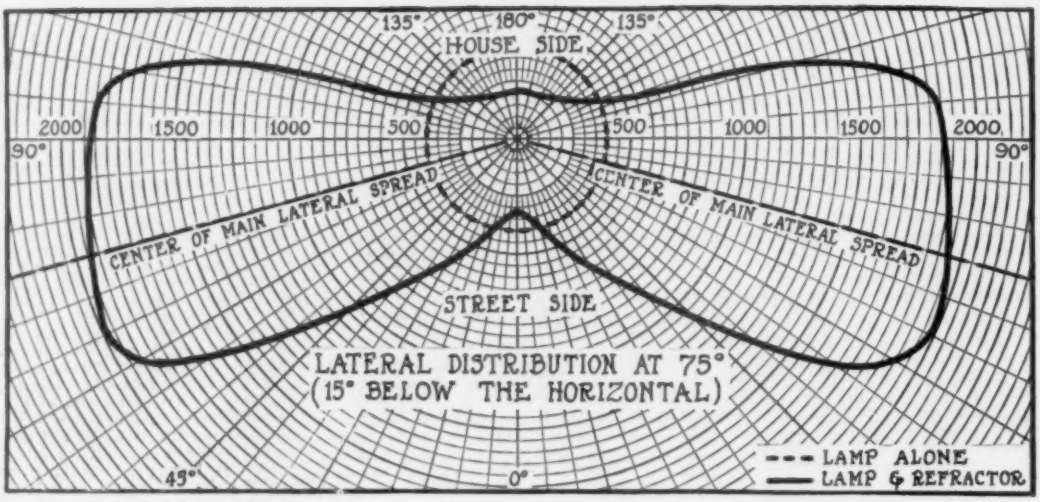
HARTFORD, CONN.—Annual Report, Board of Water Commissioners, for the year ended December 31, 1929. 74 pp.

NEW YORK, N. Y.— Final Report, Daniel Guggenheim Fund for the Promotion of Aeronautics, 1929. 24 pp.

NEW YORK, N. Y.—Year Book, 1930, The Merchants' Association of New York. 368 pp.

PLAINFIELD, N. J.—Annual Report, 1929. 79 pp.

How to choose the right type of Asymmetric Unit



OBVIOUSLY, in many cases, there is a waste of light when a street is illuminated with a symmetric light distribution. The street area to be lighted is rectangular; whereas the symmetric light distribution is circular as shown by the dotted line in the diagram above.

To obviate this waste, Holophane Asymmetric Refractors were designed. The distribution of one such unit is shown by the solid line in the diagram.

But no single asymmetric distribution will cover the lighting requirements of all kinds of streets. Some streets are wider than others; some have broader sidewalks; some should have greater mounting heights than others. As these factors vary, so do the requirements of correct light distribution.

Analysis has shown that six distributions cover the entire range of street lighting requirements; and Holophane offers a refractor providing each of these six distributions.

To utilize light properly, therefore, requires the choice of the proper refractors. Complete information on which to base such choice will be gladly supplied. Write for Data Sheets No. 8150 and No. 8154 or any other Engineering Data.

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CLEVELAND CINCINNATI

CONVENTIONS—WHEN AND WHERE

(Figures in parentheses following the name of the convention city indicate the estimated attendance, other than local.)

NOVEMBER 1.—CANON CITY, COLO. (30)
State Association of Commercial Organizations of Colorado. Annual meeting. Secretary, Elmore Peterson, Extension Division, University of Colorado, Boulder, Colo.

NOVEMBER 5-7.—CEDAR RAPIDS, IOWA. (75)
American Water Works Association—Missouri Valley Section. Annual meeting. Secretary, Earl L. Waterman, University of Iowa, Iowa City, Iowa.

NOVEMBER 6-7.—TORONTO, ONT.
Canadian Tax Conference of the Citizens' Research Institute of Canada. Convention. Director, Horace L. Brittain, 21 King Street, Toronto, Ont.

NOVEMBER 10-12.—CLEVELAND, OHIO.
Governmental Research Association. Annual meeting. Secretary-Treasurer, Russell Forbes, 261 Broadway, New York.

NOVEMBER 10-12.—CLEVELAND, OHIO.
National Association of Civic Secretaries. Annual meeting. Secretary, Nat Spencer, Citizens' League, Kansas City, Mo.

NOVEMBER 10-12.—CLEVELAND, OHIO.
National Municipal League. Annual convention. Secretary, Russell Forbes, 261 Broadway, New York.

NOVEMBER 10-12.—CLEVELAND, OHIO. (100)
Ohio Municipal League. Meeting. Secretary-Treasurer, Professor Harvey Walker, Ohio State University, Columbus, Ohio.

NOVEMBER 10-12.—CLEVELAND, OHIO.
Ohio State Conference on City Planning. Annual meeting. Secretary, Gerald S. Gimre, City Hall, Youngstown, Ohio.

NOVEMBER 10-12.—CLEVELAND, OHIO.
Proportional Representation League. Annual meeting. Executive Secretary, George H. Hallett, Jr., 311 South Juniper Street, Philadelphia, Pa.

NOVEMBER 13-14.—CLEVELAND, OHIO.
American Municipal Association. Annual meeting. Executive Secretary, John G. Stutz, Lawrence, Kans.

NOVEMBER 12-15.—CHARLESTON, S. C. (200)
National Association of Railroad and Utilities Commissioners. Convention. Secretary, James B. Walker, 270 Madison Avenue, New York.

NOVEMBER 17-20.—PITTSBURGH, PA. (500)
American Association of State Highway Officials. Annual convention. Executive Secretary, W. C. Markham, 1222 National Press Building, Washington, D. C.

NOVEMBER 18-20.—NEW YORK.
National Association of State Auditors, Comptrollers and Treasurers. Annual convention. Secretary, S. H. Blan, State Auditor, Montgomery, Ala.

NOVEMBER 19-21.—CALGARY, ALTA. (250)
Alberta Association of Municipal Districts. Annual convention. Secretary, E. Pinchbeck, Spruce Grove, Alta.

NOVEMBER 19-20.—UNIVERSITY CITY, MO. (150)
League of Missouri Municipalities. Annual meeting. Executive Secretary, J. W. Lumpp, 6801 Delmar Boulevard, University City, Mo.

NOVEMBER 19-22.—WASHINGTON, D. C.
White House Conference on Child Health and Protection. General session. Chairman, Ray Lyman Wilbur, Secretary of the Interior, Washington, D. C.

NOVEMBER 20.—PHILADELPHIA, PA.
The Engineers Club of Philadelphia. Joint meeting with the Philadelphia Section of the American Society of Civil Engineers. Secretary, Charles E. Billin, 1317 Spruce Street, Philadelphia, Pa.

NOVEMBER 24-26.—OKLAHOMA CITY, OKLA. (200)
Oklahoma Municipal League. Annual convention. Secretary, Roy Eaton, Norman, Okla.

DECEMBER 1-5.—NEW YORK.
American Society of Mechanical Engineers. Annual meeting. Secretary, C. W. Rice, 29 West 39th Street, New York.

DECEMBER 1-5.—MEMPHIS, TENN. (850)
The Asphalt Institute. Ninth Annual Asphalt Paving Conference. Managing Director, J. E. Pennybacker, Crystal Building, 801 Second Avenue, New York.

DECEMBER 1-5.—MEMPHIS, TENN. (850)
Association of Asphalt Paving Technologists. Meeting in conjunction with the Ninth Annual Asphalt Paving Conference of The Asphalt Institute. Secretary-Treasurer, C. A. Mullen, 980 Saint Antoine Street, Montreal, Que.

DECEMBER 2-4.—CHICAGO, ILL.
American Association of Pools and Beaches, Inc. Annual convention. Executive Secretary, Lyle L. Jenne, 725 Bulletin Building, Philadelphia, Pa.

DECEMBER 2.—NEW YORK.
American Institute of Weights and Measures. Annual meeting. Secretary, W. E. Bullock, 33 Rector Street, New York.

DECEMBER 8-10.—GRAND FORKS, N. DAK.
North Dakota Water and Sewage Works Conference. Annual meeting. Secretary-Treasurer, A. L. Bavone, Bismarck, N. Dak.

DECEMBER 9-10.—WASHINGTON, D. C.
National Rivers and Harbors Congress. Annual. Secretary-Treasurer, S. A. Thompson, 824 Colorado Building, Washington, D. C.

DECEMBER 11-12.—WINTER PARK, FLA. (500)
Florida League of Municipalities. Semi-annual meeting. Secretary-Treasurer, E. P. Owen, 1601 Lynch Building, Jacksonville, Fla.

DECEMBER 11-12.—WASHINGTON, D. C. (250)
National Research Council—Highway Research Board. Annual meeting. Director, Roy W. Crum, B and 21st Streets, Washington, D. C.

DECEMBER 12-13.—ASBURY PARK, N. J. (175)
New Jersey Public Health and Sanitary Association. Annual meeting. Secretary, Dr. Edward Guion, Box 318, Atlantic City, N. J.

JANUARY 12-16.—ST. LOUIS, MO. (25,000)
American Road Builders' Association. Annual meeting. (Distributors' Day—January 10.) Secretary-Director, Charles M. Upham, National Press Building, Washington, D. C.

JANUARY 15-17.—WASHINGTON, D. C. (100)
American Engineering Council. Annual meeting. Executive Secretary, L. W. Wallace, 26 Jackson Place, Washington, D. C.

JANUARY 15.—BOISE, IDAHO. (100)
Idaho State Chamber of Commerce. Annual meeting. Secretary, F. L. Parsons, 529 Idaho Building, Boise, Idaho.

JANUARY 19-23.—LAFAYETTE, IND. (500)
Purdue Road School. Address: Professor Ben H. Petty, Engineering Extension Department, Purdue University, Lafayette, Ind.

JANUARY 19-23.—DETROIT, MICH.
Society of Automotive Engineers. Annual meeting. Secretary and General Manager, John A. C. Warner, 29 West 39th Street, New York.

JANUARY 20-23.—WACO, TEXAS. (300)
Texas Water-Works Short School. Annual session. Address: V. M. Ehlers, Secretary of the Southwest Water Works Association—Texas Section, Austin, Texas.

JANUARY 21-23.—NEW YORK. (1,000)
American Society of Civil Engineers. Annual meeting. Secretary, George T. Seabury, 33 West 39th Street, New York.

JANUARY 22.—NEW YORK. (75)
American Society of Civil Engineers—City Planning Division. Annual meeting. Secretary, Harold M. Lewis, 130 East 22nd Street, New York.

JANUARY 27-31.—NEW YORK.
American Institute of Electrical Engineers. Annual winter convention. National Secretary, F. L. Hutchinson, 33 West 39th Street, New York.

JANUARY 27-29.—PITTSBURGH, PA.
American Society of Heating and Ventilating Engineers. Annual meeting. Secretary, A. V. Hutchinson, 29 West 39th Street, New York.

FEBRUARY 4-6.—PITTSBURGH, PA.
National Paving Brick Manufacturers Association. Annual meeting. Chief Engineer and Managing Director, G. F. Schlesinger, 1245 National Press Building, Washington, D. C.

FEBRUARY 5.—DANVILLE, VA.
Virginia State Chamber of Commerce. Annual meeting. Managing Director, LeRoy Hodges, 708 Grace-American Building, Richmond, Va.

FEBRUARY 18-20.—ATLANTIC CITY, N. J. (3,000)
Association of Highway Officials of North Atlantic States. Annual convention. Secretary-Treasurer, A. Lee Grover, Secretary of the State Highway Commission, Trenton, N. J.

FEBRUARY 23-24.—CHICAGO, ILL. (75)
American Concrete Pipe Association. Annual convention. Secretary, M. W. Loving, 33 West Grand Avenue, Chicago, Ill.

MARCH 2.—HURON, S. DAK.
South Dakota Commercial Secretaries' Association. Annual convention. Secretary, G. R. McArthur, Huron, S. Dak.

APRIL 15.—NORFOLK, VA.
American Society of Civil Engineers. Annual spring meeting. Secretary, George T. Seabury, 33 West 39th Street, New York.

APRIL 20-23.—BIRMINGHAM, ALA.
American Society of Mechanical Engineers. Semi-annual meeting. Secretary, C. W. Rice, 29 West 39th Street, New York.

APRIL 20-21.—MARLIN, TEXAS. (5,000)
East Texas Chamber of Commerce. Convention. Secretary, Hubert M. Harrison, Longview, Texas.

APRIL 23-24.—ROANOKE, VA. (125)
Southern Commercial Secretaries' Association. Annual meeting. Secretary-Treasurer, Karl Lehman, Orange County Chamber of Commerce, Orlando, Fla.

APRIL 28-MAY 1.—ATLANTIC CITY, N. J. (3,000)
Chamber of Commerce of the United States of America. Annual meeting. Secretary, D. A. Skinner, 1615 H Street, N. W., Washington, D. C.

MAY 4-9.—WASHINGTON, D. C. (2,000)
International Chamber of Commerce. Biennial Congress. Manager of the American Section, John P. Gregg, Connecticut Avenue and H Street, N. W., Washington, D. C.

MAY 25-29.—PITTSBURGH, PA. (1,000)
American Water Works Association. Annual convention. Secretary, Beekman C. Little, 29 West 39th Street, New York.

Fourth Institute of Municipal Affairs

PROFESSOR K. R. B. Flint, Director of the Bureau of Municipal Affairs at Norwich University, announces that the Fourth Institute of Municipal Affairs will be held at Montpelier, Vt., January 14-15, 1930, during the week following the opening of the General Assembly. At that time consideration will be given to the formation of a Vermont League of Municipalities.

American Public Health Association

AT the convention of the Association held in Fort Worth, Texas, last month, the following officers were elected for 1931:

President, Dr. Hugh S. Cumming, Surgeon General of the United States.

Vice-Presidents, Dr. Rafel Silva, of Mexico, Dr. J. W. S. McCullough, of Toronto, Dr. A H. Flickwir, of Fort Worth.

Treasurer, Louis I. Dublin, of New York.

Chairman of the Executive Board, Dr. W. S. Rankin, of Charlotte, N. C.

Executive Secretary, Homer N. Calver, of New York.

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One of Chicago's Most Exclusive Suburbs Selects
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BEAUTY
in Sculptured Design and Natural Color

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STRENGTH IN CENTRIFUGALLY CAST GRANITE CONCRETE

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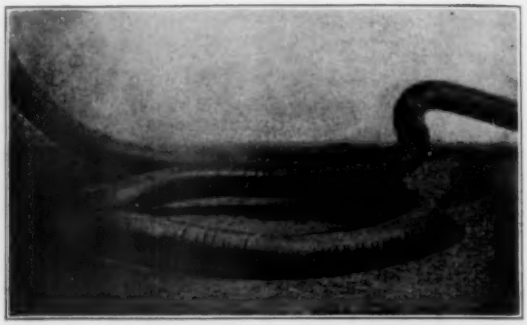
"ANOROC"

Solves the ozone problem for rubber insulated high tension cables



The usual methods of attempting to solve the corona and ozone problem in relation to cable insulation, to prevent ozone cuts such as are shown in the illustration, have been with metallic shields, protective coverings or with so called ozone proof, ozone resisting or ozone repelling insulation.

To obtain positive, dependable results the problem must be attacked from the opposite angle. Formation of corona and ozone can be controlled by using properly designed cables insulated with "ANOROC", (corona from the opposite angle) a new type of rubber insulation, which positively prevents the formation of corona and ozone in or about a cable at normal operating voltage. The efficacy of this method of protecting cable insulation from ozone has been amply demonstrated by laboratory tests fully substantiated by actual service under operating conditions.

"ANOROC" insulation retains all of the electrical, chemical and physical properties which have made rubber the most adaptable and desirable insulation for cables.

Further information and details of tests are contained in a recent Simplex publication entitled "Corona Prevention and Ozone Elimination". May we send a copy to you?

Patent applied for

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BRANCH SALES OFFICES
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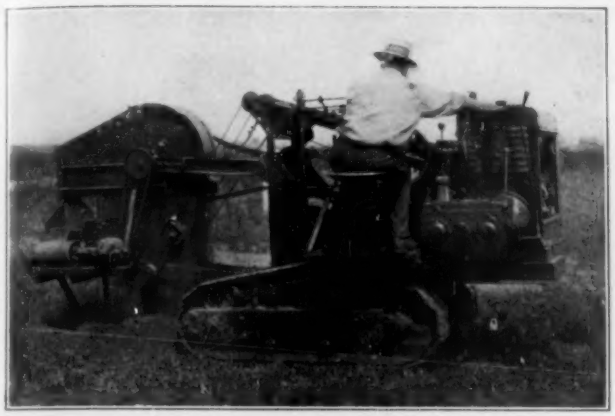
NEW YORK, 1328 B'way CLEVELAND, 2019 Union Trust Bldg.
PHILADELPHIA, 1227 Fidelity-Philadelphia Trust Building
JACKSONVILLE, 417 Barnett National Bank Building

NEWS AND ILLUSTRATIONS

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings



THE NEW BARBER-GREENE SERVICE SPECIAL DITCHER

A New Small Vertical Boom Ditcher

A vertical boom ditcher that is only 4 feet wide and 11 feet 6 inches long and no higher than a tall man's head when digging, and which will dig a trench from 5 inches to 8 inches wide and from zero to 3 feet deep at varying speeds from 15 inches to 12 feet a minute, has been announced by the Barber-Greene Co., Aurora, Ill.

The Service Special Ditcher has all the features of the big Barber-Greene machines, and is crawler mounted. It has the vertical boom which allows it to dig right up to a sidewalk or curb, ending the trench flush, and to cut a square corner. As insurance against strains caused by striking underground obstacles and as a protection to any underground pipes, the machine is equipped with the standard B-G overload release sprocket, a device that automatically stops the bucket line without injuring anything or killing the engine. The construction of this sprocket is such that at every half revolution, it exerts a pull on the bucket line before slipping again and, if the operator desires, he can keep the buckets pounding at the obstacle until it is cut through.

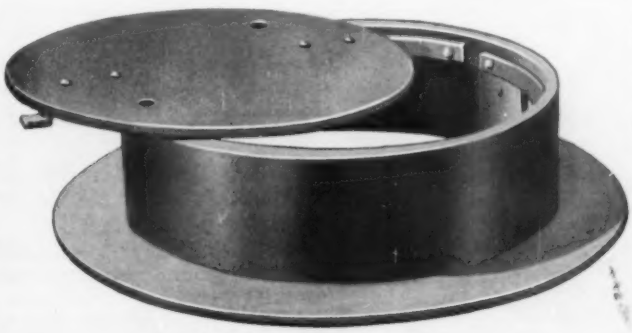
The buckets clean themselves automatically, even in very sticky material. Attached to the boom is a telescopic follow-up scraper which insures a clean trench. The boom is raised by power, making it possible for the operator to dig accurately to grade at all times.

The traveling speeds of this ditcher are 2 miles and 1⅓ miles per hour. Its speed, small size and crawler mounting make it highly maneuverable and able to go into places and do things that would be impossible for a big ditcher. Although a very light machine, it is built throughout of heavy structural steel and is powered by a 33 b.h.p. four-cylinder Buda gasoline engine.

Steel Manholes

For use in city streets or as coal-hole and cistern covers, the Standard Steel Manhole Co., P. O. Box 685, East Fifth and Elm, Des Moines, Iowa, has brought out a new steel manhole. It is claimed to be non-breakable, light in weight, easy to handle, requires no expensive replacements, and has a self-locking lid.

The standard manhole for street installation has a cover 22 inches in diameter, with a ring 7 inches high and 1 inch thick, and a flange 4 inches wide. This type weighs 178 pounds. Other sizes may be secured, if desired.



THE STANDARD STEEL MANHOLE

The coal-hole and cistern cover is made in two sizes. No. 18 has a cover diameter of 18 inches and a 3-inch ring, and weighs 75 pounds, and No. 24 has a 24-inch cover and a ring 3½ inches wide, and weighs 95 pounds. It is also made in a rectangular shape.

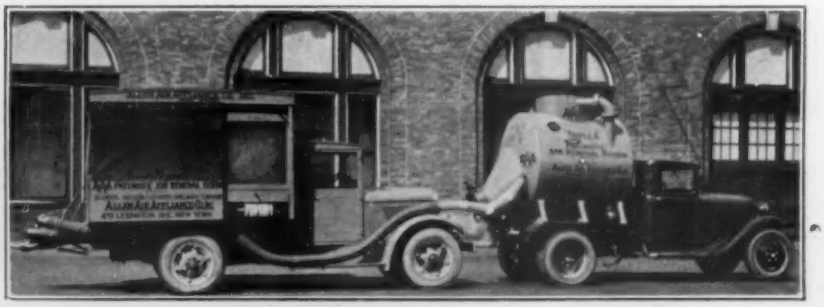
In tests made by the Engineering Experiment Station of the Iowa State College at Ames, Iowa, a load of 55,000 pounds was necessary to deform the steel, and even then it did not break.

Dustless Removal of Ashes from Buildings

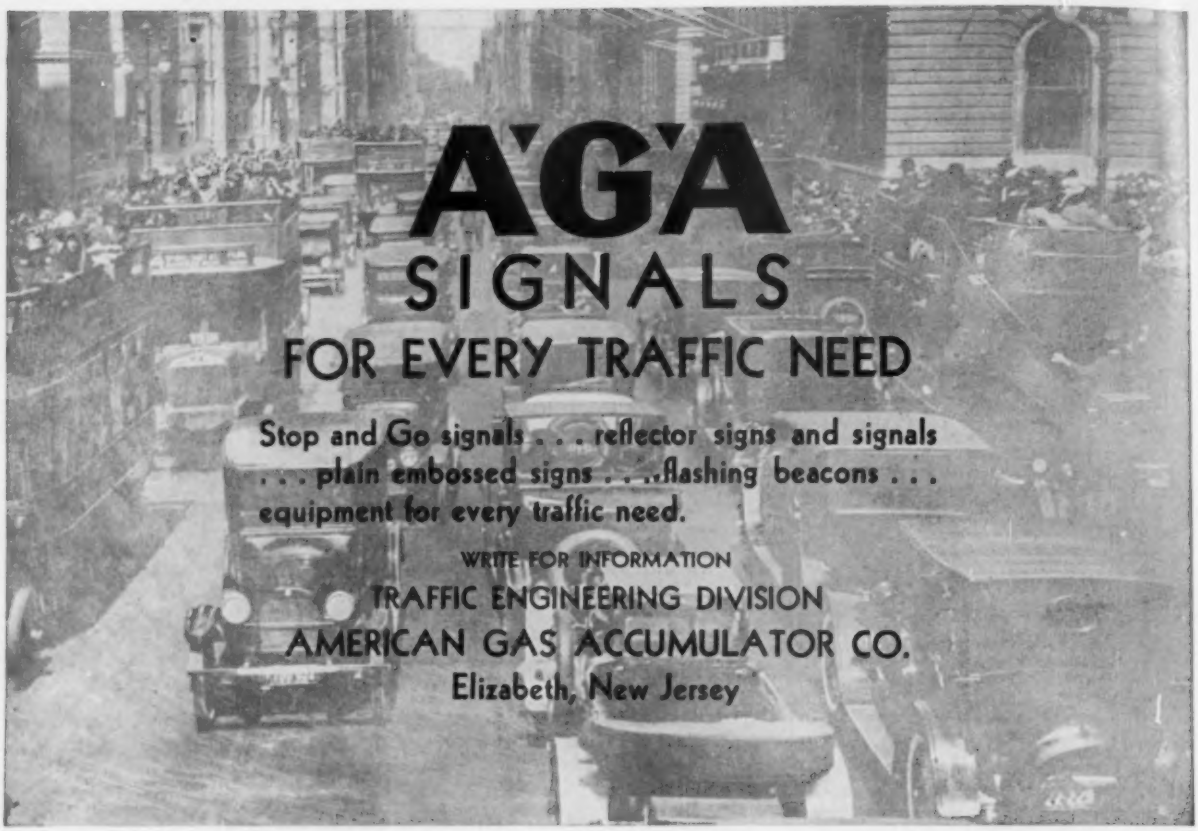
The removal of ashes by pneumatic means directly from the basements of buildings to the airtight ash container mounted on a motor truck outside the building is now possible by means of the Triple-A portable ash-removal system manufactured by the Allen Air Appliance Co., Inc., 452 Lexington Ave., New York.

The apparatus is mounted on two separate motor trucks which are temporarily joined together only while ashes are being drawn from the basement. The first truck, known as the dump unit, carries the airtight steel ash container. The second truck, known as the power unit, carries the suction-producing apparatus and gasoline motor. Two separate trucks are used, to avoid the necessity of taking the power unit to the dump yard each time a load of ashes is moved. Thus two, or even three, ash dump units may be operated with one power unit, the latter being operated continuously while the ash dump units are going back and forth as rapidly as filled and emptied.

For permanent service a pipe line is installed extending from basement to street level. It is then merely necessary for the truck to make connection to this pipe line at the street level. Where the service is temporary or intermittent, a flexible conduit is temporarily extended from the truck to the ash pit.



COMPLETE EQUIPMENT FOR THE TRIPLE-A PNEUMATIC ASH-REMOVAL SYSTEM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Stop and Go signals . . . reflector signs and signals
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equipment for every traffic need.
WRITE FOR INFORMATION
TRAFFIC ENGINEERING DIVISION
AMERICAN GAS ACCUMULATOR CO.
Elizabeth, New Jersey

"V" Truck Snow Plow

"V" Tractor Snow Plow

Baker Bulldozer

Baker Rotary Scraper

Built Up to Your Standards

Baker Snow Plows for Trucks and Tractors
Over 40 models in both "V" and blade types.

Baker Maney Self-Loading Scrapers
¾, 1 and 1½-cubic yard capacities for tractors.

Baker One Man Automatic Rotary Scrapers
4 sizes, 13 to 40 cubic foot capacities.

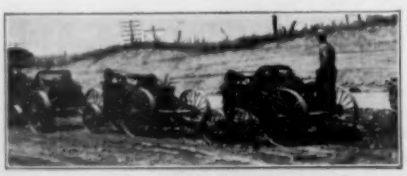
Baker Hydraulic Bulldozers and Backfillers
For Caterpillar and Monarch Tractors.

These catalogs are ready for you:

No. 290—Equipment for Earth Moving and Road Maintenance. ☐
No. 291—Baker Snow Plows for Motor Trucks and Tractors. ☐

The Baker Manufacturing Co.
503 Stanford Avenue Springfield, Ill.

BAKER
TRACTOR EQUIPMENT
EARTH MOVING-ROAD MAINTENANCE-SNOW REMOVAL



Baker Maney Scrapers

LABOUR SELF-PRIMING CENTRIFUGAL PUMP

Direct-mounted Self-Priming Centrifugal Pumps

Combining light weight and easy portability with staunch, sturdy construction, the LaBour Co., Inc., Elkhart, Ind., has developed the LaBour Type WPD 4-inch direct-mounted self-priming centrifugal pump.

This new model is guaranteed for a 20-foot suction lift. It is a 4-inch pump with a capacity of 400 gallons per minute at a 25-foot head or 350 gallons per minute at a 35-foot head. The suction trap and separator are cast of aluminum, which, while it costs more than other materials, permits light weight in conjunction with heavy walls and resultant long life. The pump casing is cast iron and the impeller is a special chrome-nickel alloy steel with great wear-resisting qualities. It is a single unit with one impeller and is completely self-priming, without the use of valves, floats or auxiliary apparatus of any kind. There is no recirculation after prime has been established, so that high efficiency is obtained and there is no interruption of the priming action due to clogging of small by-pass openings.

The pump is powered with a direct-connected LeRoi 8-10 horsepower ball-bearing engine which is governor-controlled and is set at the factory for best operation. Weighing less than 1,000 pounds and carefully balanced on its two wheels, the complete outfit can be moved easily by one man. Adjustable legs on one end permit placing the pump in a solid position even when resting on uneven ground.

Burch Now Making the Ross Snow-Plow

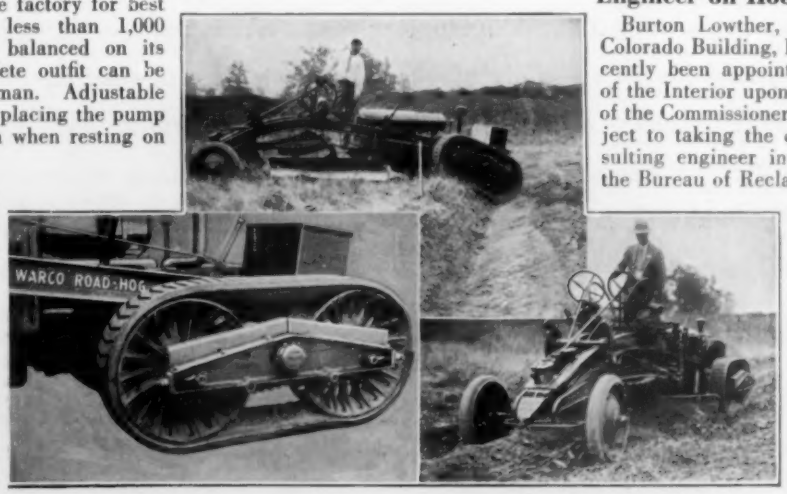
The Burch Corporation, Crestline, Ohio, has taken over and is now manufacturing the Ross snow-plow. This plow when attached to a truck of sufficient capacity will effectively clear ice and snow from the highway. The designer, Lester P. Ross, will have personal supervision of the construction, thus assuring completeness in every detail.

High-Speed Rubber Crawlers

For use on tractors and power graders, the W. A. Riddell Co., Bucyrus, Ohio, has developed the Model TR rubber crawler, which is interchangeable either with the Warco steel crawler or with rubber-tired wheels on the same tractor axle, and each crawler is free to oscillate about its axle independently of the other. This feature is of importance in power grader service, as it relieves the tractor and grader frame of many strains and stresses when passing over irregular surfaces.

Another feature of this rubber crawler is that it drives both front and rear idler wheels, making it possible to run either forward or backward with equal facility. The driving chain is of the continuous roller type. Driving both wheels halves the strain on the driving chain, increases the life of the rubber tread by eliminating most of the pull from the bottom run, and doubles the traction. The idler wheels are both adjustable and are held in tension by udylite plated, rustproof bolts. The chain sprockets are machine-cut, case-hardened and riveted to the hubs. The idler wheels and drive sprocket hub bearing are roller-bearing mounted and effectively sealed against dirt. The rubber tread is of standard make, manufactured by the Goodyear Tire & Rubber Co., Akron, Ohio.

This crawler is now available for the industrial Model 20 McCormick-Deering tractor and will soon be available for application to Fordson, Case and Allis-Chalmers tractors.



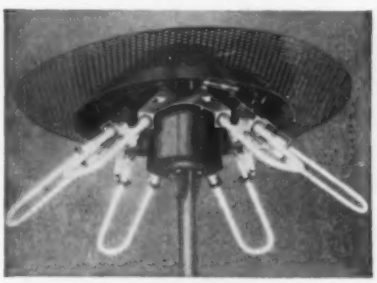
ONE-MAN GRADERS EQUIPPED WITH THE NEW WARCO HIGH-SPEED RUBBER CRAWLERS

Airplane Guide and Obstruction Marker

An effective and distinctive light for marking obstacles and for guiding airplanes has been developed by the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.

The marker is composed of six U-shaped Neon tubes connected in series and gives a large area light source of a very distinctive red color. Should one or more of the tubes become defective, it is cut out of the circuit by an automatic cutout, so that the marker will remain in service as long as one active tube is left. The possibility of their all burning out is very remote. The markers have pedestal-type mountings that may be bolted securely to any solid support. For operation on low voltages, a transformer is mounted directly under the hood. When used for marking transmission towers or where high voltages are available, the marker may be connected directly across the line.

The six Neon tubes are fastened symmetrically about a central canopy where they can be detached quickly and replaced easily without the use of tools. The tubes are comparatively short and are very strong, but for districts where severe hailstorms are experienced a hail screen can be provided to protect the tubes.



THE TYPE LT WESTINGHOUSE MARKER FOR CONNECTING DIRECTLY TO 110- OR 220-VOLT LINES

Lowther Appointed a Consulting Engineer on Hoover Dam Project

Burton Lowther, consulting engineer, Colorado Building, Denver, Colo., has recently been appointed by the Secretary of the Interior upon the recommendation of the Commissioner of Reclamation, subject to taking the oath of office, a consulting engineer in the field service of the Bureau of Reclamation, to make recommendations as to the source of water-supply, water sedimentation and purification, if required, the type of equipment and general arrangements of the water-works and sewerage system and disposal works. This refers to work at the Hoover dam-site and a town-site for 5,000 inhabitants.

Free-moving traffic on the broad concrete-paved Hutchison River Parkway, in Westchester County, New York

Encourage free traffic movement with wide concrete highways

The only remedy for traffic congestion is wider, safer highways. Many of our main concrete roads of today are ample in every element but width. They can readily be widened *without disturbing traffic*—a feature of concrete. For new roads, traffic requires the *gritty,* sure-footed surface of concrete in order to maintain maximum legal speed with safety in all kinds of weather. Every highway user is sufficiently benefited by free moving traffic to work for it.

PORTLAND CEMENT *Association*

Concrete for Permanence

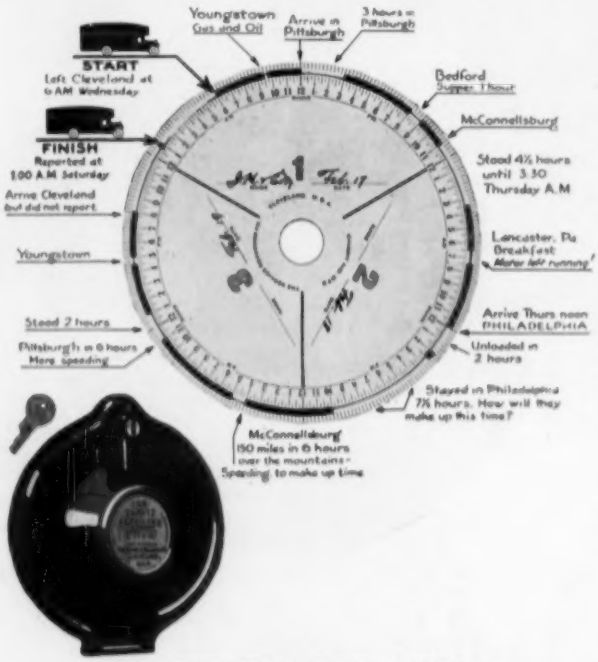
33 WEST GRAND AVENUE
CHICAGO

Mention THE AMERICAN CITY—it helps.

New 3-Day Truck Recorder

A new recorder for motor trucks which records three days and three nights of travel on one chart is announced by the Service Recorder Co., Hanna Building, Cleveland, Ohio. The actual chart is 6 inches in diameter and divided into three sections. It is mounted on a clock movement which revolves only once in 72 hours. This new timing mechanism makes possible a chart on which the travel record does not overlap.

It is especially designed for long-distance trucks. The heavy marks show when the truck is traveling; blank spaces show when the truck is standing still. The attachment is very simple, as the recorder is merely attached to the body of the vehicle by three screws or bolts. The higher up the better, but it will record anywhere just so long as it hangs fairly vertical and faces front or back. The side sway of the moving vehicle swings a pendulum on which is mounted a stylus or marker. This stylus scrapes the wax off the chart as shown, so that no ink or pencil is needed.


Youngstown Gas and Oil
Arrive in Pittsburgh
3 hours in Pittsburgh
START
Left Cleveland at 6 AM Wednesday
Bedford Supper Thour
McConnellsburg
FINISH
Reported at 1:00 A.M. Saturday
Stood 4½ hours until 3:30 Thursday A.M
Arrive Cleveland but did not report
Lancaster, Pa Breakfast Motor left running
Youngstown
Stood 2 hours
Arrive Thurs noon PHILADELPHIA
Pittsburgh in 6 hours Merg speeding
Unloaded in 2 hours
Stayed in Philadelphia 7½ hours. How will they make up this time?
McConnellsburg 150 miles in 6 hours over the mountains - Speeding to make up time

THE SERVIS RECORDER AND CHART OF A TYPICAL TRIP

The illustration shows a chart recording a trip from Cleveland to Philadelphia and back. On long trips like this only the big stops are important, but on this chart stops as small as five minutes can be easily distinguished.

Legaré Engineering Company

A new consulting engineering organization known as the Legaré Engineering Co., with general offices in Suite 206, 1226 Sumter Street, Columbia, S. C., has been announced, with T. Keith Legaré as President. This organization is prepared to furnish a complete engineering service in municipal, highway and industrial engineering, and also a system of advisory service for towns and counties in connection with the operation of public works. Engineers with extensive training and experience in all the principal branches of professional engineering are associated with the organization. Other members of the organization are: J. E. Gibson, Vice-President, who is Manager and Engineer, Water Department, Charleston, S. C.; Thomas F. Ball, Secretary-Treasurer, who is head of the Department of Electrical Engineering of the University of South Carolina; Elroy G. Smith, consulting engineer, of Augusta, Ga.; G. E. Shand, consulting engineer, Columbia, S. C.

New Floodlight for Small Airports

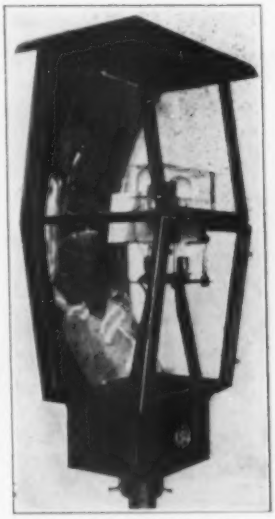
For floodlighting small airports from one point, for floodlighting larger airports, or airports with shifting wind directions, from two or more points, and for lighting any large area where a narrow vertical spread and a wide horizontal spread of the light are desired, the General Electric Co., Schenectady, N. Y., has developed the Type 2-ALH-5B floodlight.

High illumination is obtained by the use of parabolic, cylindrical glass mirrors with straight-line focus, and by the use of high-efficiency Mazda lamps with concentrated filaments. The units are totally enclosed and both weatherproof and dustproof. Cooling is by radiation.

The special design of the mirror and the concentration of the lamp filament minimize the upward glare by making the beam angle very narrow in the vertical direction. This gives better control of the light, enabling it to be thrown on the landing area, where it is needed.

Two 1,500-watt, 32-volt, Type T-24 Mazda C airport floodlighting lamps are placed along the focal line of the cylindrical parabolic trough mirror, which is 36 inches high and 15 inches wide. Light is conserved by having a spherical mirror in front of each lamp, returning the direct light to the large parabolic mirror and adding approximately 30 per cent to the intensity of the main beam. The optical system is enclosed on the front and two sides by heat-resisting glass. The remainder of the housing consists of sheet metal, painted with the conventional stripes of black and chrome yellow.

The floodlight is integrally equipped with a compensator or auto-transformer for changing the 115 volts of the distribution transformer to the recommended 32 volts. Taps are provided for 110 and 115 volts. A transformer for 230-, 220- and 210-volt lines can also be supplied. The unit is suitable for remote control, and does not require an attendant at the floodlight. The over-all dimensions are approximately 2 x 2 x 4 feet.



NEW G E TYPE 2-ALH-5B AIRPORT FLOODLIGHT

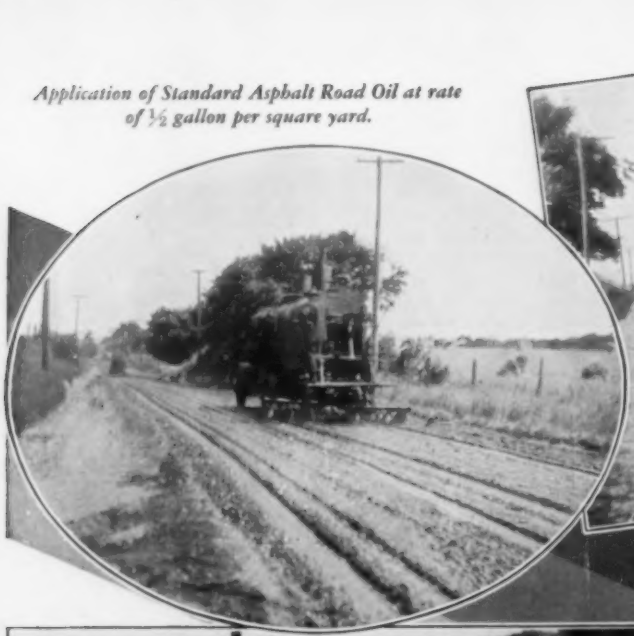
Measurements made in the General Electric illuminating engineering laboratory show that the maximum range of the beam is about 2,200 feet, the maximum spread about 2,100 feet, the vertical beam angle about 2.7 degrees and the horizontal beam angle about 95 degrees.

A New Road Torch

For use on road and other outside construction work the Consolidated Iron-Steel Mfg. Co., 1290 53rd Street, Cleveland, Ohio, has developed the T & B torch. These torches are of the best quality gray iron with joints accurately fitted and are practically unbreakable.

The shape of the torch makes it practically impossible to tip it over accidentally and the new type of improved burner makes for economy of oil. They are easily cared for, requiring a minimum of time for refilling and conditioning, the shape affording great stability without artificial ballast, and they will stay lighted in all kinds of weather.

THE T & B ROAD TORCH



Application of Standard Asphalt Road Oil at rate of ½ gallon per square yard.

Mixing Standard Asphalt Road Oil and aggregate with disc.

Mixing to thoroughly coat aggregate with Road Oil.

Dragging with maintainer to smooth out while traffic is compacting roadway.

You can also build low cost improved roads like this

It is a bituminous road built with Standard Asphalt Road Oil and Mineral Aggregate. It is economical to maintain. It does not require expensive equipment in building.

St. Joseph County, Indiana, recently built two and one-half miles of this type road, using one and one-half gallons of Standard Asphalt Road Oil per square yard and three inches of existing aggregate in the road. The mixing was done on the roadway with a farm disc and blade. A maintainer was used to smooth the road while it was compacting under traffic.

This method of building low cost roads is being used more extensively every year because it is so economical and provides such a durable, easily maintained surface.

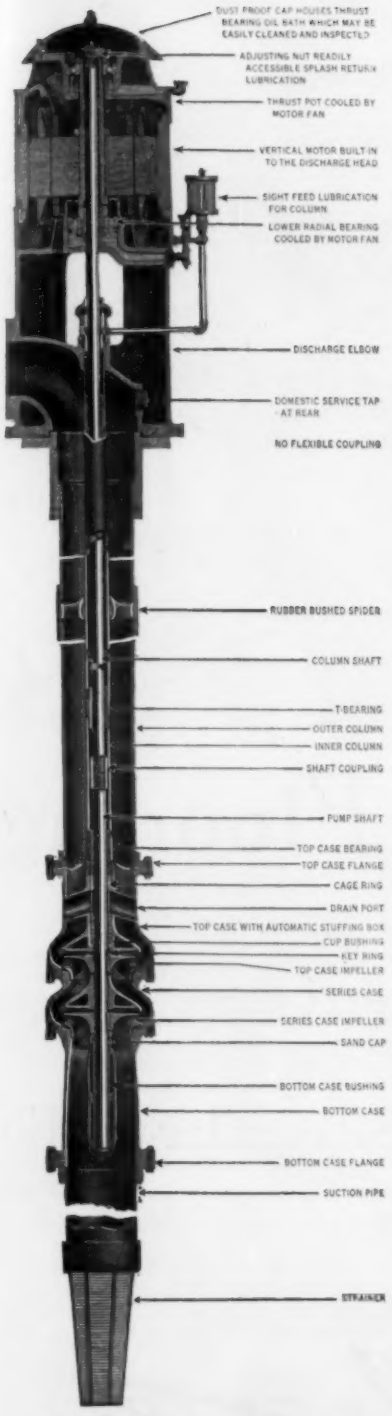
It will pay you to investigate this type construction for your next year's road building program. Our engineers will be glad to answer any questions and make recommendations.

STANDARD OIL COMPANY

(INDIANA)

General Offices: 910 South Michigan Avenue Chicago, Illinois

Why not remember to mention THE AMERICAN CITY?



CROSS-SECTION OF PUMP HEAD AND SHAFT CONSTRUCTION OF BYRON JACKSON DEEP-WELL TURBINE

A Deep-Well Turbine Pump

Built with one or more "stages," the standard Byron Jackson deep-well pump is of the centrifugal type, with enclosed impellers. For each size of pump case there are no less than four interchangeable impeller types, designed to cover the maximum range in head and capacity for any given size of pump. The impellers are hand finished and balanced hydraulically and dynamically. Either cast iron or bronze may be used. The pump shaft, to which the impellers are keyed, is of stainless steel.

In all pumps made by the Byron Jackson Pump Co., Berkeley, Calif., the top and bottom pump case bearings are of bronze with the lower bearing protected by a patented sand cap, which insures the exclusion of sand or grit. A patented automatic stuffing-box incorporated in the top case prevents pressure developed by the pump from entering the inner column.

The pump column serves as the discharge line of the pump and also houses the line shaft and shaft bearings. The method of construction provides an inner tube, which encloses both the shaft and bearings, excluding water and sand and affording positive lubrication. The inner tube is installed under tension to insure perfect shaft alignment.

Three-arm, bronze spider guides, spaced at iregular intervals, prevent vibration. The column is furnished in standard lengths of 12 feet, which are easily handled in the field. The outer column is furnished of standard pipe in all sizes from 3½ to 18 inches. Extra-heavy pipe is used exclusively for the inner column, which is supplied in 6-foot lengths, being joined together by means of a combination bearing coupling, which is threaded externally. Built of special phosphor bronze, the bearing couplings are spaced every 6 feet and grooved internally for oil lubrication, which is supplied by gravity feed from the surface.

The standard pump heads for Byron Jackson electric drive are fitted with motors of the built-in type, the motor being built as an integral part of the head structure. One thrust bearing carries the weight of the rotor of the motor and the rotating element of the pump. Removal of the motor cap permits adjustment of the rotating element from the top without moving any other parts of the pump. For belt drive, an overhung pulley assembly is so designed as to be interchangeable with motor parts of the standard built-in head. The radial and thrust bearings contained in heads supplied with pumps of medium and short settings are of the angular contact ball type. The thrust bearings provided in cases of long pump settings are of the Kingsbury water-cooled type.

All discharge head castings are of standard design, permitting interchangeability of built-in motor, pulley or geared parts and range in size from 3 hp. to 400 hp.

Hardie Sprayers Now Equipped with Novo Engines

Powering a heavy-duty sprayer may not look difficult to those who are not familiar with this type of equipment, but it is really one of the toughest jobs an engine can be asked to do. For example, a 3-inch plunger on a spray pump carrying 500 pounds pressure has to displace or lift 3,500 pounds at each stroke. This means operating continuously under a heavy load.

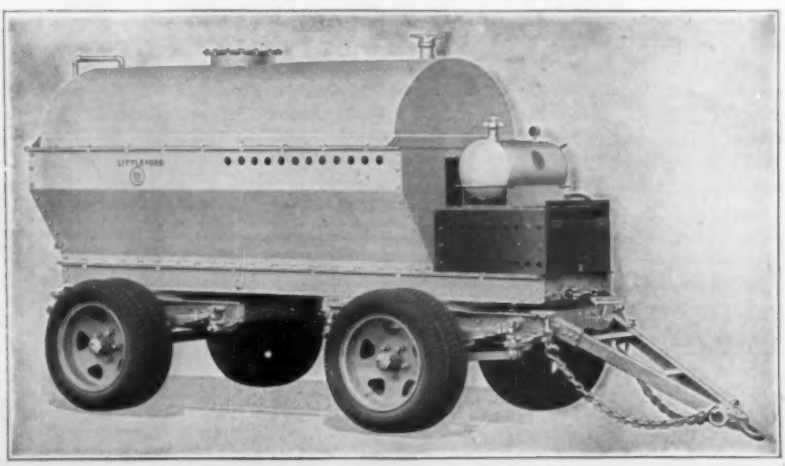
Hardie sprayers, made by The Hardie Manufacturing Co., Hudson, Mich., are well known in the municipal and agricultural fields for their service in spraying shade trees and fruit trees. Hardie is now powering its sprayers with Novo Rollr Engines because of their light weight, compact design, anti-friction power, vibrationless operation, low gas consumption, quarter-turn cranking, extra horsepower, and dependability.

New Paradon Representatives

The Paradon Co., Arlington, N. J., has announced the appointment of W. Austin Smith, 1207 Lynch Building, Jacksonville, Fla., C. Fuson, 246 Court Avenue, Memphis, Tenn., and The Smiley Equipment Co., Kansas City, Mo., as representatives for the sale and service of Paradon chlorinators in their respective districts.

Tar Kettles with Dual Pneumatic Tires

A new mounting for its No. 97 distributor supply tank has been brought out by Littleford Bros., Cincinnati, Ohio. This new trailer is equipped with dual pneumatic rubber tires and is of the reversible steer type. The drawbar may be detached and hooked onto the other end of the trailer to pull it in the opposite direction.



LITTLEFORD TAR KETTLE WITH DUAL PNEUMATIC TIRES

Vine Street Bridge, Ottumwa, Iowa, floored with approximately 28,000 sq. feet of 1½-inch Carey Elastite Asphalt Plank—laid in July, 1929.

Here's a Bridge Flooring

—that is easier to install
—that gives a "bumpless" surface
—that lasts longer
—that actually knits and heals under traffic

Carey Elastite Asphalt Plank . . . the modern flooring that meets the exacting demands of today's heavy traffic. Quickly laid . . . permits bridge to be opened in shortest time. Easily laid . . . requires no expensive equipment . . . saves time, labor, money. Smooth . . . traffic glides over it noiselessly. Bruise-proof . . . long wearing.

Used on bridges everywhere . . . from Maine to California. Endorsed by leading contractors, municipal, state, and government engineers and commissions. Complete details and prices gladly mailed on request. Write

Carey Elastite ASPHALT PLANK

THE PHILIP CAREY COMPANY — *Lockland,* Cincinnati, Ohio

BLIZZARD BUSTER SNOW-FENCE INSTALLATION AT MENOMONIE JUNCTION, WIS.

Snow-Fence in Wisconsin

The accompanying photograph shows a mile-long installation of Blizzard Buster pressed steel snow-fence in Dunn County, Wis., at Menomonie Junction, made by the Northfield Iron Co., Northfield, Minn. It will be noted that the fence is clear of snow and, while in the illustration it looks as if the heavy drift is on the opposite side of the fence, it actually lies between the road and the fence, the fence being clear of snow for the full mile in length. This fence protects one of the main highways leading out of Menomonie, Wis., and has been in satisfactory service for two winters.

Worthington Acquires Gilman Manufacturing Company

The Worthington Pump & Machinery Corporation, 2 Park Avenue, New York, has announced that it has acquired the Gilman Manufacturing Co., East Boston, Mass. The Worthington Corporation is thus expanding its line of pneumatic service to mines, quarries, contractors and industry, manufacturing under one head, with one responsibility, adding the Gilman line of rock-drilling equipment which supplements the well-established line of Worthington Feather Valve air-compressors.

Incinerator Company Moves to New Offices

To better serve the widespread demand for incineration, the Kerner Incinerator Co. has moved its plant from 3541 to 3713 North Richards Street, Milwaukee, Wis. These new quarters not only increase the previous manufacturing space, outgrown in four years, but also make it possible to house the Milwaukee office of the Morse-Boulger Destructor Co., of New York, as well as the plants of the Kernit Incinerator Co. and the Kerner Automatic Hoist Co., all affiliated companies, under one roof.

New Philadelphia Manager for Lecourtenay

The Lecourtenay Company, Newark, N. J., manufacturers of centrifugal pumps, have announced the appointment of F. J. Moran as Philadelphia District Manager, with offices in the Witherspoon Building.

Two New Ammoniators

The increasing use of the chlorine ammonia process for the prevention of phenol and certain organic tastes and odors in water-supplies is being given extensive investigation.

Wallace & Tiernan Co., Inc., Newark, N. J., has developed the MDPA and MDWA ammoniators. This apparatus embodies all the experience the company has gained in 17 years' association with gas control and follows very closely the design of their direct feed chlorinators, though certain modifications and changes have been necessary to adapt this apparatus to the feeding of ammonia gas.

W & T AMMONIATOR

The MDPA ammoniator is a self-contained unit and can be installed anywhere. The MDWA unit is made in two forms, one for mounting on the wall at a place convenient to the point of application, and the other adaptable for mounting on the standard W & T Type MDP or MSP chlorinators.

The apparatus is rugged, well constructed and handsomely finished and is guaranteed to an accuracy of four per cent.

Harbor Works on Great Lakes

The probable completion in the near future of the St. Lawrence Deep Waterway Project is creating much interest and activity in the ports of the Great Lakes. Many of these have instituted Harbor Boards as initiative bodies for port works and administration.

To assure proper and logical development of its port for commerce and industry, the Harbor Commission of Green Bay, Wis., has engaged MacElwee & Crandall, Inc., consulting engineers, of Cambridge, Mass., to make a thorough investigation and study of the port and to report upon a plan to be followed so that the various services and facilities may be properly coordinated and the port have its fullest development.

New Manager for Okonite Metropolitan Territory

The Okonite Co. and The Okonite-Callender Cable Co., Inc., manufacturers of insulated wires and cables for electrical power, signal and control circuits, have announced the appointment of W. R. Van Steenburgh as Manager of the Light and Power Department of the New York office territory. He will direct sales and engineering activities in New York, New Jersey, Pennsylvania, Delaware, Maryland, West Virginia, Virginia and the District of Columbia.

New York Installation of Street Markers

An important step in the safeguarding of pedestrians on the streets of New York was taken recently when thousands of metal markers were installed in the pavement at Times Square to form a permanent silver-like guide line at crosswalks.

The markers used in this installation were Britemarks, made by the Metal Traffic Marker Corporation, New York. They resemble a large thumbtack of malleable cast iron with a heavy cap of bright, rust-proof and corrosion-resistant Monel metal. Tires passing over them will maintain rather than dim their polish.

Pedestrians have accepted the markers as a means of protection while crossing streets, and automobilists have been provided with indelible marks at which they must stop on a signal, greatly speeding up traffic. The markers are as visible and efficient at night time as during the day.

Police Department officials and civic organizations of the city have been quick to recognize their advantages and have started movements to extend their use to other parts of the city.

INSTALLING BRITEMARKS AT TIMES SQUARE, NEW YORK CITY

Where traction *means* yardage

THE scraper fills quickly in soft soil—there is need for the full power of the dependable engine in the "Caterpillar" Tractor. The long, wide tracks of the "Caterpillar" ripple over the surface of the soft soil with no wasteful slip. Tractor and scraper go into the corners, climb the steep grades, ride the soft places—handling yardage for the earth-mover and contractor with a saving of men, money and minutes.

• • •

Prices—f. o. b. Peoria, Illinois

TEN	$1100	TWENTY	$1900
FIFTEEN	$1450	THIRTY	$2375
SIXTY	$4175		

Caterpillar Tractor Co.

PEORIA, ILLINOIS *and* SAN LEANDRO, CALIF., U. S. A.

Track-type Tractors ◦ Combines ◦ Road Machinery

(There's a "Caterpillar" Dealer Near You)

CATERPILLAR
REG. U. S. PAT. OFF.
TRACTOR

PUMP EXHIBIT IN LOBBY OF HERRING HOTEL, AMARILLO, TEXAS

Pump Exhibit at A. W. W. A. Convention

At a recent convention of the American Water Works Association, held at Amarillo, Texas, the various Mid-Western distributors of Pomona pumps installed an interesting exhibit at the Herring Hotel. A complete operating unit actually producing water in the hotel lobby attracted considerable attention. The accompanying photograph shows several of the distributors grouped around the pump. From left to right, they are H. W. Ross, Fred H. Barnes, S. F. Smith, R. W. Butters, A. V. Shuler, W. G. Price and Joe Baker.

A Competition for Best Elevated Tank Design

The Chicago Bridge & Iron Works, Chicago, Ill., manufacturer of steel tanks and of steel plate work, is sponsoring a competition for improved design in elevated steel tanks. Prizes totaling $4,000 are being offered for the best eight renderings. The first prize amounts to $2,000, the second prize $1,000, third prize $500, and five honorable mention awards of $100 each. Entries in the competition will consist of two drawings of a typical elevated steel tank with a nominal capacity of 200,000 gallons, a height to top of approximately 110 feet, a height to bottom of not less than 85 feet, and a riser not less than 5 feet in diameter. One drawing will include a direct elevation and two horizontal sections or plans to ¼-inch scale. The other will be a perspective drawing to the same scale.

The entries will be received anonymously, displayed in a suitable room in an impartial manner, and judged by a Jury of Award consisting of Howard Cheney, President of the Chicago Chapter of the A. I. A., R. W. Zimmerman, architect, of Chicago, and George T. Horton, President of the Chicago Bridge & Iron Works.

Albert M. Saxe, 430 North Michigan Avenue, Chicago, Ill., has been appointed professional advisor for the competition and will handle all communications regarding it. A booklet giving complete details of the competition may be secured by addressing Mr. Saxe. The competition is open to all architects, engineers, and draughtsmen all over the world. Applications for entry will be received by the professional advisor until December 1, 1930, and the contest closes March 1, 1931.

U. S. Pipe and Foundry Co. Opens Research Laboratory

On October 22 a group of trade paper editors and several engineers from foreign countries were the guests of the U. S. Pipe & Foundry Co., at Burlington, N. J. A very thorough inspection was made of the new Research Laboratory which this company has recently established to study casting problems and methods of remedying them. When a new line of research is developed it is to be tested in the laboratory and, if found feasible, will then be tried on a small commercial scale in the experimental plant, and if there found successful, will be placed in production in the large foundries at Burlington.

The laboratory is a three-story wing built adjacent to the general offices and in the same style. The laboratory may be entered from the general offices or from the roadway which runs in front of the building. On the first floor is the entrance lobby with interesting exhibits including an old cast iron pipe cast on the side, showing the varying thickness of the walls, two cutaway sections of Anthony joint for gas pipe, sections of bitumastic and cement lined pipe and DeLavaud pipes machined down to a very thin sections to show the character of the metal. In addition, there is a model of a sugar house which was exhibited by this company at the Sesqui-Centennial Exposition at Philadelphia.. Back of the entrance lobby is the physical laboratory, which is completely equipped for the physical testing of metals. A large Hoskins electric heat treating furnace with automatically controlled heat and also a smaller electric furnace for other specimens, Olsen automatic-pressure Brinnell apparatus, a new Olsen cement tester, a Rockwell hardness tester, an Olsen impact testing machine, a ring impact tester developed by the physicists of the company, and an Amsler hydrostatic testing machine capable of testing metals either in compression or tension up to 50,000 pounds, are among the larger pieces of equipment in this laboratory. A Diston power hacksaw for preparing sections and rings, and other machine tools, are provided.

On the second floor are the library and offices, on the third floor are the chemical laboratory and the photographic and grinding room, as well as the cement laboratory. The cement laboratory is equipped for drying and automatically recording the per cent moisture of sand; it also has a machine for testing cores either green or dried, a porosity tester and the usual molds for preparing cement specimens for cement briquettes for testing. The photographic room has an apparatus of great magnification for photographing polished specimens of metal. This Leitz-Wetzler photographic apparatus will take pictures of anything from a grain of sand to a section of 8- or 10-inch pipe. A special grinder room for preparing specimens for the photo-micrographs and a dark room are provided.

The chemical laboratory is complete with gas, water, and air piping and electric current, all of the metal being chromium plated to prevent corrosion. Numerous other special pieces of apparatus such as the high-speed electrolytic cabinet, in which a gram of metal can be deposited electrolytically in a few minutes, complete the equipment.

On the roof sections of pipe and metal are exposed for corrosion tests, and in a swampy field nearby specimens are secured for soil corrosion tests. In the basement, at present, there is a special machine set up to determine the resistance of various pipe linings to leaching. Sections of pipe are set up with the various linings and filled with distilled water, which is churned constantly by plungers and samples of the water taken each week for analysis.

This laboratory, which has fifteen employees and research assistants, is in direct charge of Dr. F. C. Langenberg and represents a large investment.

THE NEW RESEARCH LABORATORY OF THE U. S. PIPE & FOUNDRY CO. AT BURLINGTON, N. J.

Your copy is ready

FREE BOOK

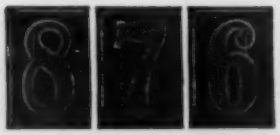
on House Numbering

A LIMITED numbers of Premax House Numbering Portfolios are available for city planning commissions and city officials. Get your copy now. You'll find it full of useful information. The author, Nathan N. Walpert, M.E., national authority on house numbering, explains many successful city numbering systems. And the line of Premax Deluxe House Numbers—found ideal by scores of cities—is completely illustrated and described.

One glance at Premax Deluxe Numbers explains their popularity. They're so beautifully finished—so gracefully designed and so legible—that they win instant preference over ordinary numbers. Made of pure aluminum, their gleaming, non-reflecting surface stands out boldly from the black enamel background. And despite their superiority, their cost is surprisingly low.

Let the Premax House Numbering Portfolio help you with your renumbering program. Send the coupon now—before the supply is exhausted. With it, we'll send samples of Premax Numbers—all with no obligation. Premax Products, Inc., 234 Tenth St., Niagara Falls, N. Y.

The Deluxe Number satin silver-finish aluminum on a black enamel background is one of the several attractive styles in which Premax House Numbers are made.



PREMAX PRODUCTS, INC.,
234 Tenth St., Niagara Falls, N. Y.

Please send me without obligation the Premax House Numbering Book and samples of Premax House Numbers.

Name .....

Address .....

City and State .....

Page Fence

for Public and Private Parks and Institutions

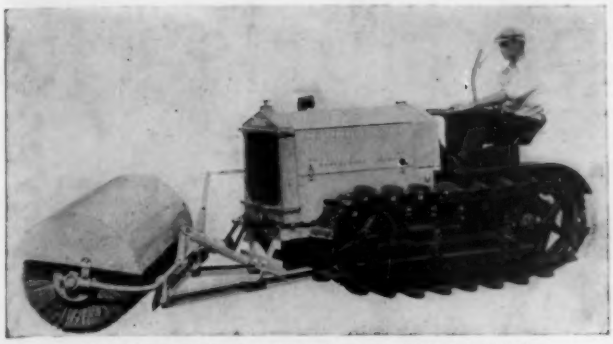
ALUMINUM

A Page Fence built for great durability under adverse conditions

Page Fence of Alcoa ALUMINUM Wire provides protection at lowest cost per year—a worth-while economy. Page-Alcoa ALUMINUM Fence is never marred by rust, is unaffected by moisture—almost inert to chemicals in the air which attack and in time destroy other metals!

The same strength and resistance to corrosion that make Alcoa ALUMINUM the ideal metal for airplane construction and for the external ornamentation of buildings, have been found of the greatest value for fencing.

Let us send you full descriptive details about Page Fence of "the new metal." Let us give you the address of the nearest of 64 Page Service Plants where an expert will be glad to estimate costs, lay out your fencing plan, assist in selecting the type of fence most suitable and superintend erection. Address Page Fence Association, 520 North Michigan Avenue, Dept. A6, Chicago, Illinois.



DETROIT STREET SWEEPER AND SNOW BRUSH

A Street Sweeper and Snow Brush

Municipal officials, state and county road commissioners and others upon whom rests the burden of keeping routes open and in condition so that traffic may move freely and efficiently, will be interested in the tractor-driven Detroit brush, which weighs 700 pounds and can be attached without any alteration to the Cletrac 20 tractor.

This brush, made by the Detroit Harvester Co., 5450 West Jefferson Avenue, Detroit, Mich., is particularly valuable during the winter months after snowfalls, as it will handle snow 10 to 12 inches in depth, making a clean sweep and keeping a path clear for the tractor itself. Being driven direct from the tractor motor and working ahead in plain view of the operator, it can be maneuvered at will.

A permanent adjustable stop allows the brush to be fixed exactly where the operator wants it to ride, permitting the broom to be raised, but preventing it from digging into the ground. The standard brush is 6 feet long, travels at an angle of 35 degrees, and will sweep a space approximately 5½ feet wide. A sprocket is located on each end so that the brush can be reversed at any time.

Every broom is filled with 90 pounds of high-grade split bamboo. Before insertion in the core, the bamboo bristles are thoroughly boiled so as to give them texture and insure good wear. All roller chain is of high quality, will not stretch, and has a minimum pulling capacity of 9,000 pounds.

The brush arm of seamless tubing is threaded with a right-hand thread on one end and a left-hand thread on the other, making it possible to adjust the tension of the chain without taking the brush out of the holder.

Steel sprocket gears are used throughout, and the chain and sprocket are enclosed in a sheet metal housing which prevents rope, paper, or refuse of any kind from getting into the gears underneath the chain.

The gear bowl housing is made of strong material and is braced to withstand severe usage. The ball bearings have an ample load capacity, and the assembling of the unit is very simple and easily adjusted. A U-bolt goes over the front axle at points where the two T sections cross, thereby eliminating all side motion. Grease-cups are provided at all points needing lubrication.

New Addresses of Chain Belt Co.

The Chain Belt Co., Milwaukee, Wis., has announced that the main office, grey iron foundries, and the chain manufacturing plants are now located at 1600 West Bruce Street, Milwaukee, Wis. The former address was 736 Park Street. The address of the West Milwaukee works where the concrete mixer plant, the engineering and conveyor plants, and the malleable foundries are located has been changed from 39th Avenue and Orchard Street to South 45th Street and Orchard.

The Cleveland division, The Stearns Conveyor Co., will remain at East 200th Street and St. Clair Avenue, Cleveland, Ohio.

Diesel Engine Manufacturer Completes Sales Organization

The Power Manufacturing Co., Marion, Ohio, makers of Victor diesel type engines, have announced the completion of their distributors organization and their regional sales district. The regional representatives are: L. R. Johnson, Marion, Ohio, for the northern region; H. G. Stuart, 1716 Faxon Avenue, Memphis, Tenn.; Cuvis Carey, 113 Murray Street, Dallas, Texas; B. H. Rice, Marion, Ohio, for the western region; and Arthur F. King Co., 111 Sutter Street, San Francisco, Calif. G. V. R. Mulligan is manager in charge of diesel engine sales for the company.

Twenty-fifth Anniversary of Pipe Company

The American Cast Iron Pipe Co., Birmingham, Ala., was incorporated in the state of Georgia on October 9, 1905, and, during the past quarter of a century, has grown from a small plant to an extensive organization.

The name of John J. Eagan, the first President of the company, will always be inseparably linked with the Acipco organization. As the company grew and enlarged its facilities for pipe manufacture, it also provided numerous services for the benefit of its employees, including bath-houses and lockers in 1912, and modern restaurant and Y.M.C.A. in 1913, followed by a complete medical dispensary for the care and treatment of all employees and their dependents. In 1917 the pension fund was inaugurated and at present 67 employees are being cared for out of this fund. In 1922 the first profit-sharing arrangement was established, and unemployment wages and vacations to day-wage workers with pay have been established during recent years. In 1929 group life insurance, covering all employees, was purchased.

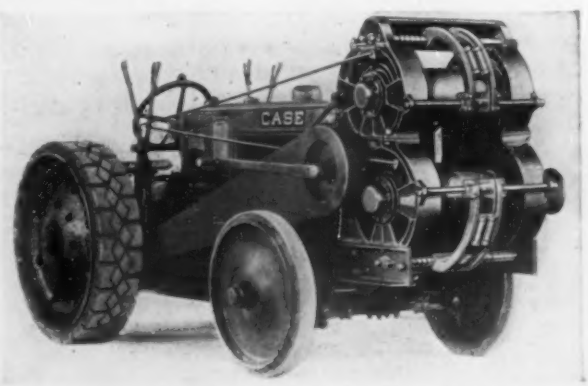
In some of the outstanding developments of the past quarter-century this company has been a pioneer. Acipco was the first pipe foundry to operate continuously with day and night shifts as well as the first shop to manufacture pressure pipe in 16-foot lengths. Cement lining of cast iron pipe was also first undertaken by this organization, as was the introduction and development of the Mono-Cast centrifugal process of manufacturing pipe.

A New Model Portable Hoist

For handling concrete and other building materials, steel erection, double-elevator operation, lifting heavy machinery, dragline excavating and other similar work, the Trackson Co., Milwaukee, Wis., has brought out its portable hoist in a new model, known as the HC, which is adapted to mounting on the Case Model CI industrial and Model C agricultural tractors.

Some of the many improvements and additions in this hoist which make for greater efficiency and economy are oversized drum shafts, stronger frames, improved clutches and the Trackson Level Wind, which prevents the cable from criss-crossing and bunching up. Operation is very simple and all of the controls are within easy reach of the operator. All moving parts are shielded.

This model can be obtained either as a single- or double-drum hoist and either can be readily converted into the other type by merely mounting or detaching the upper drum. The patented Level Wind greatly reduces wear and tear on the cable. It winds evenly and smoothly, layer after layer, at all speeds and handles different size cables. Working with this device is an anti-back-lash which maintains proper tension and keeps the cable securely wrapped, even when the line ahead suddenly goes slack.



THE MODEL HC TRACKSON HOIST FOR CASE TRACTORS

When Winter Hurls His Challenge

BE READY!

THERE is no way to evade the issue when Winter strikes! Swiftly and with little warning Winter takes control of city and countryside, paralyzing trade and traffic, threatening lives and property. There's only one way to master the situation—*be prepared with competent, adequate snow fighting equipment.*

For nearly fifteen years Cletrac Crawler Tractors have been the preferred power units for the nation's snow fighting work. Built sturdy and rugged as fine steels and sound design can make them, they are ideal for this gruelling service. They are powered for handling the heaviest types of plows and equipment. Moving along on broad, sure-gripping steel tracks they bring their full power to bear on stubborn banks and smash through seemingly impassable drifts. Many times they have been called on to complete jobs where other tractors simply could not carry on.

Scores of letters every winter from officials testify to Cletrac's unmatched performance in snow clearing. At Hiram, Maine, last winter a Cletrac 40 was purchased for their work. "It did not seem possible," wrote the owner, "that a tractor could plow up such hills in high gear. We have used it against frozen banks, pushing them back for more than a mile. We have timed it and made six miles an hour in heavy snow easy."

Assure yourself and your community of full control over your snow removal problems this winter by selecting Cletrac. There is a distributor near you who will gladly give you the facts—or, if you prefer, write direct for literature.

Cletrac Crawler Tractors

THE CLEVELAND TRACTOR CO.
19326 Euclid Avenue
Cleveland, Ohio

A Complete Line of Heavy Duty Crawler Tractors for Use with Standard Makes of Snow Plows and Snow Fighting Equipment.